

Unit Four: Disaster Medical Operations Part 1

I. Unit Overview and objectives

A. Unit Overview

1. The need for disaster medical operations is based on two assumptions. First, the number of victims will exceed the local capacity for treatment. Second, survivors will assist others, they will do whatever they know how to do. If they are going to do the greatest good, they need to know lifesaving or post-disaster survival techniques.
2. In a disaster, there may be more victims than rescuers and immediate help will not always be available. People who have Community Emergency Response training will be able to function quickly and efficiently to save lives.
3. CERT personnel will receive training in this unit to:
 - a. Conduct triage - learning to evaluate victims sorting them based on the urgency of the treatment needed and set up for immediate or delayed treatment.
 - b. Treat for life-threatening conditions - airway obstruction, bleeding and shock. Treat non-life threatening conditions.
 - c. Do the greatest good for the greatest number of people by conducting simple triage and rapid treatment.

Unit Overview (continued)

4. There are three phases of death from trauma.
 - a. Phase 1: Death within minutes as a result of overwhelming and irreversible damage to vital organs.
 - b. Phase 2: Death within several hours as a result of excessive bleeding.
 - c. Phase 3: Death in several days or weeks as a result of infection or multiple-system failure (i.e., complications from the injury).
 - d. The goal of disaster medical operations is to do the greatest good for the greatest number. In a disaster with many victims, time will be critical. CERT members will need to work quickly and efficiently to help as many victims as possible.

B. Objectives

At the end of this unit participants should be able to:

1. Identify life-threatening conditions, commonly known as “the killers.”
2. Apply techniques for opening the airway, controlling bleeding, and treating for shock.
3. Conduct triage under simulated disaster conditions.

II. Treating Life-Threatening Conditions

A. In emergency medicine, airway obstruction, bleeding, and shock are “killers.” The first priority of medical operations is to attend to those potential killers by:

1. Opening the airway
2. Controlling excessive bleeding
3. Treating for shock

Disaster Medical Operations pt. 1

Treating Life-Threatening Conditions (Continued)

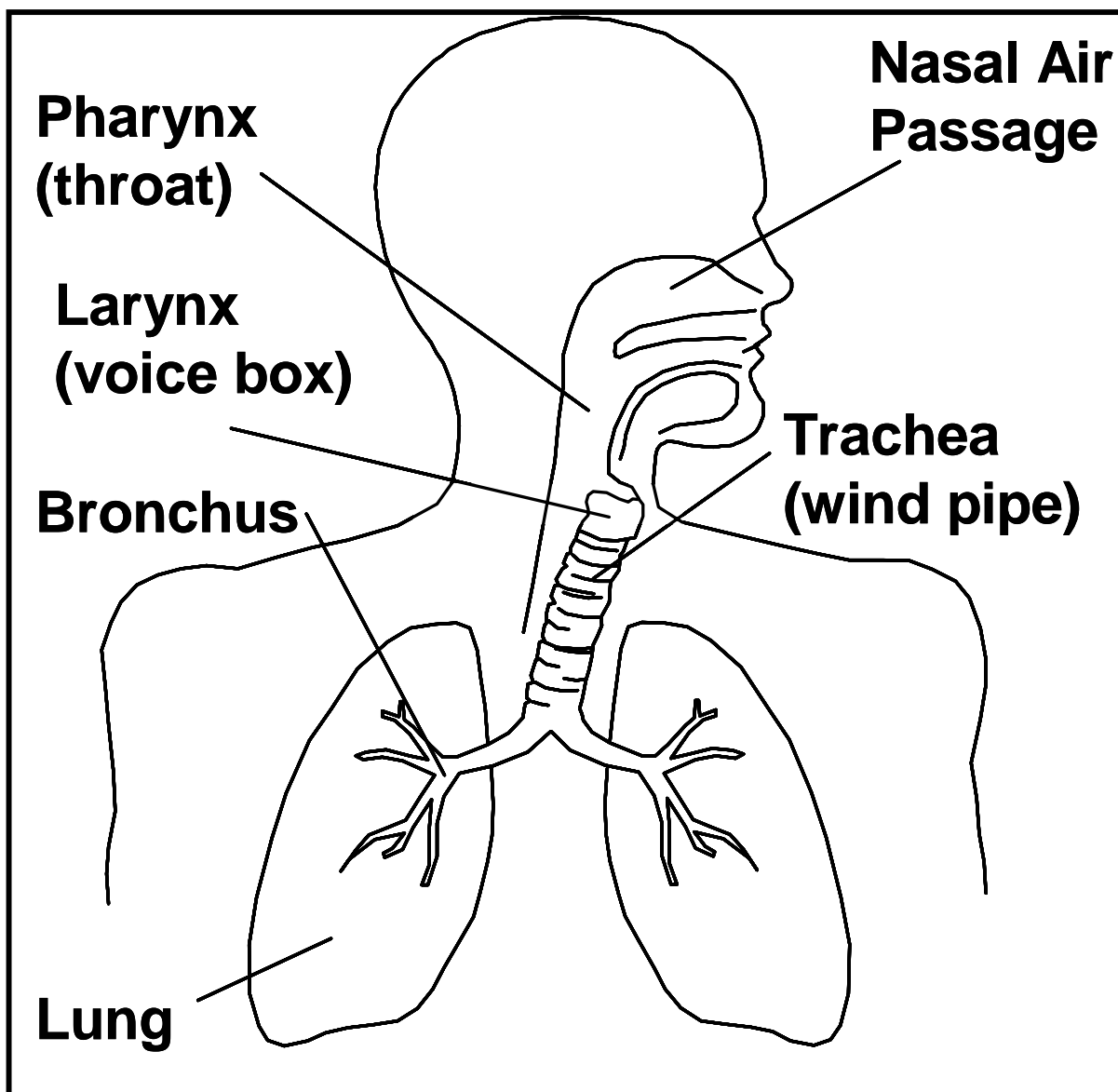
B. This section will train you to recognize the “killers” by recognizing their symptoms and their effects on the body.

C. Always wear safety equipment: Helmet, goggles, gloves, mask, and boots. A timesaving technique is to wear latex gloves under your work gloves. Then, when you find a victim, you can remove your work gloves and are ready to work with the victim.

D. Components of the Respiratory System

1. The respiratory system includes airways, lungs, and muscles

Unit Four: Disaster Medical Operations Part One
Visual One: Components of the Respiratory System



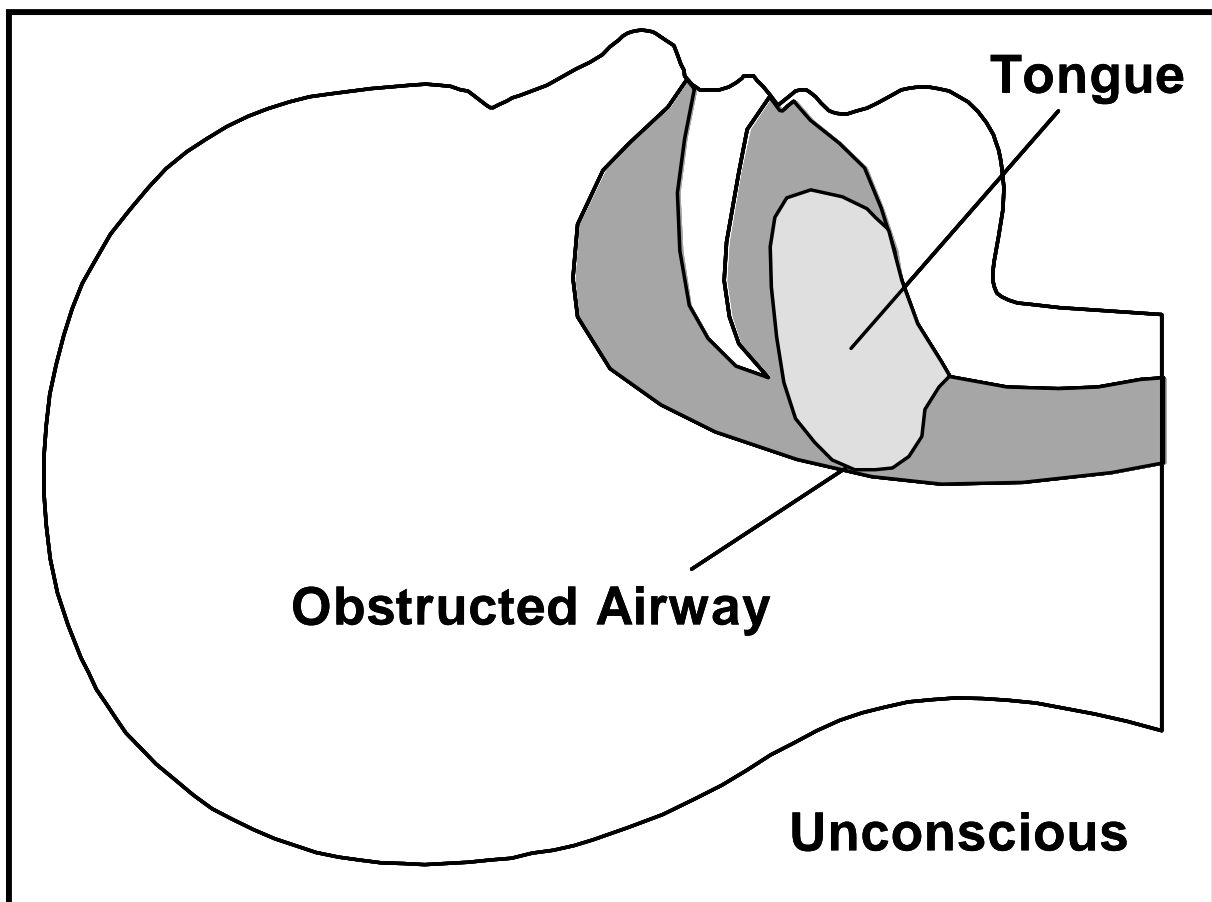
Components of the Respiratory System, showing the pharynx, nasal air passage, larynx, trachea and bronchus.

Treating Life-Threatening Conditions (Continued)

E. Opening the Airway

1. The most common airway obstruction is the tongue. In an unconscious or semiconscious victim, especially one positioned on his or her back, the tongue—which is a muscle—may relax and block the airway. A victim with a suspected airway obstruction must be checked immediately for breathing and, if necessary, the airway must be opened.

Unit Four: Disaster Medical Operations Part One
Visual Two: Airway Obstructed by the Tongue



Airway Obstructed by the Tongue

Disaster Medical Operations pt. 1

Treating Life-Threatening Conditions (Continued)

2. When an airway obstruction is suspected, CERT members should clear the airway using the Head-Tilt/Chin-Lift method.

Unit Four: Disaster Medical Operations Part One Chart One: Head-Tilt Chin-Lift Method for Opening an Airway

Head-Tilt Chin-Lift Method for Opening an Airway

Step	Action
1	At an arm's distance determine if the victim can communicate with you.
2	If the victim does not or cannot respond, place the palm of your hand on her/his forehead.
3	Place two fingers of your other hand under his or her chin and tilt the jaw upward while tilting the head back slightly.
4	Place your ear over the victim's mouth, looking toward the victim's feet and place your hand on the victim's abdomen.
5	Look, listen and/or feel for chest rise.
6	Look, listen and/or feel for air exchange.
7	Look, listen and/or feel abdominal movement

Disaster Medical Operations pt. 1

Treating Life-Threatening Conditions (Continued)

3. If breathing has been restored, the airway still must be maintained. One option is to use a volunteer or walking wounded to hold the head in place. The airway also can be maintained by placing soft objects under the victim's shoulders to elevate the shoulders slightly and keeping the airway open.

4. Part of your mission is to do the greatest good for the greatest number of people. For that reason, if breathing is not restored on the first try using the Head-Tilt/Chin-Lift method, CERT members should try again using the same method. If breathing cannot be restored on the second try, CERT members must move on to the next victim.

5. Exercise: Opening the Airway

a. Purpose: This exercise allows you to practice using the Head-Tilt/Chin-Lift method on each other.

b. Instructions: Follow the steps below to complete this exercise:

c. Work in pairs—one person will be the victim and the other person the rescuer.

d. Victims should lie on the floor on their backs or stay in their wheelchairs and close their eyes.

e. The rescuer should use the Head-Tilt/Chin-Lift method on the victim to open the airway.

f. After the rescuer has made two or three attempts at using the Head-Tilt/Chin-Lift method, the victim and the rescuer should change roles.

Treating Life-Threatening Conditions (Continued)

F. Controlling Bleeding

1. Uncontrolled bleeding initially causes weakness. If bleeding is not controlled the victim may go into shock and die. An adult has about five liters of blood. Losing one liter can result in death.

2. There are three types of bleeding which can usually be identified by the speed at which the blood flows:

a. Arterial bleeding. Arteries transport blood under high pressure. Bleeding from an artery is spurting bleeding.

b. Venous bleeding. Veins transport blood under low pressure. Bleeding from a vein is flowing bleeding.

c. Capillary bleeding. Capillaries also carry blood under low pressure. Bleeding from capillaries is oozing bleeding.

3. There are three main methods for controlling bleeding: direct pressure, elevation and pressure points.

a. direct pressure

i. There are two steps involved in applying direct pressure:

- First: Place direct pressure over the wound by putting a clean dressing over the wound and pressing firmly.
- Second: Maintain pressure on the dressing over the wound by wrapping firmly with a pressure bandage.

ii. Direct pressure and elevation can take 5 to 7 minutes to completely stop the bleeding. Using dressing and pressure bandage allows the rescuer to move on to the next victim.

iii. Pressure bandages should be tied with a bow so they can be loosened (not cut) to examine the wound and then retied. This procedure helps conserve supplies and saves time.

Disaster Medical Operations pt. 1

Treating Life-Threatening Conditions (Continued)

b. Elevation. - Bleeding can also be controlled through elevation which is a process of elevating the wound above the level of the heart. Elevation can be used in combination with direct pressure.

c. Pressure points - can be used to stem the flow of bleeding. The pressure points most often used are the:

- Brachial point in the arm.
- Femoral point in the leg.

4. When dressings are in place, you can encourage victims to help themselves whenever possible by elevating and maintaining pressure on their own wounds.

Unit Four: Disaster Medical Operations Part One Chart Two: Procedure for Controlling Bleeding

Method	Procedures
Direct Pressure	<ul style="list-style-type: none">○ Place direct pressure over the wound by putting a clean dressing over the wound and pressing firmly.○ Maintain pressure on the dressing over the wound by wrapping the wound firmly with a pressure bandage.
Elevation	<ul style="list-style-type: none">○ Elevate the wound above the level of the heart.
Pressure Points	<ul style="list-style-type: none">○ Put pressure on the nearest pressure point to slow the flow of blood to the wound. Use the:<ul style="list-style-type: none">○ Brachial point for bleeding in the arm.○ Femoral point for bleeding in the leg. <p>There are other pressure points the instructor may demonstrate.</p>

Treating Life-Threatening Conditions (Continued)

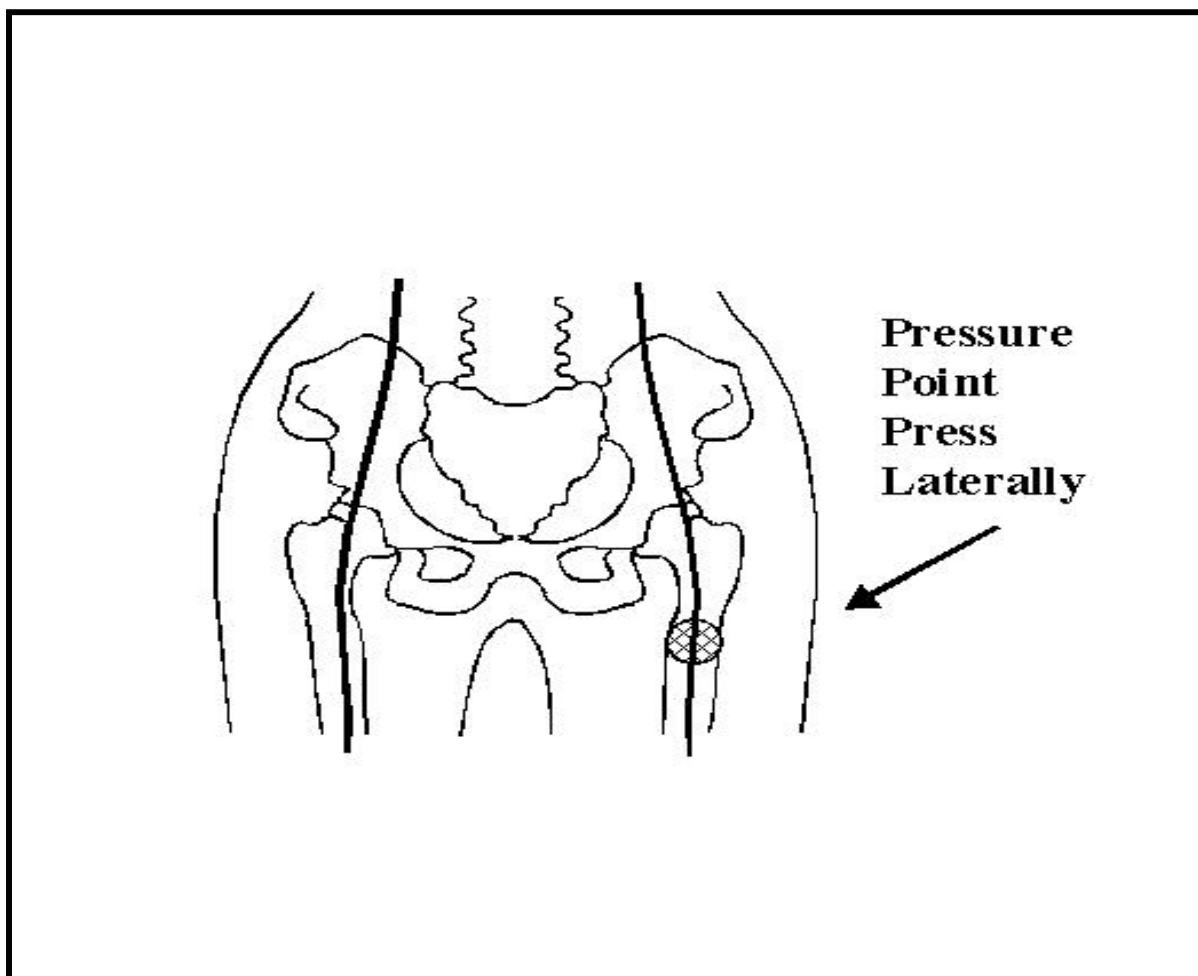
Unit Four: Disaster Medical Operations Part One
Visual Three: Brachial Pressure Point



**Visual of the brachial pressure point
just above the elbow.**

Treating Life-Threatening Conditions (Continued)

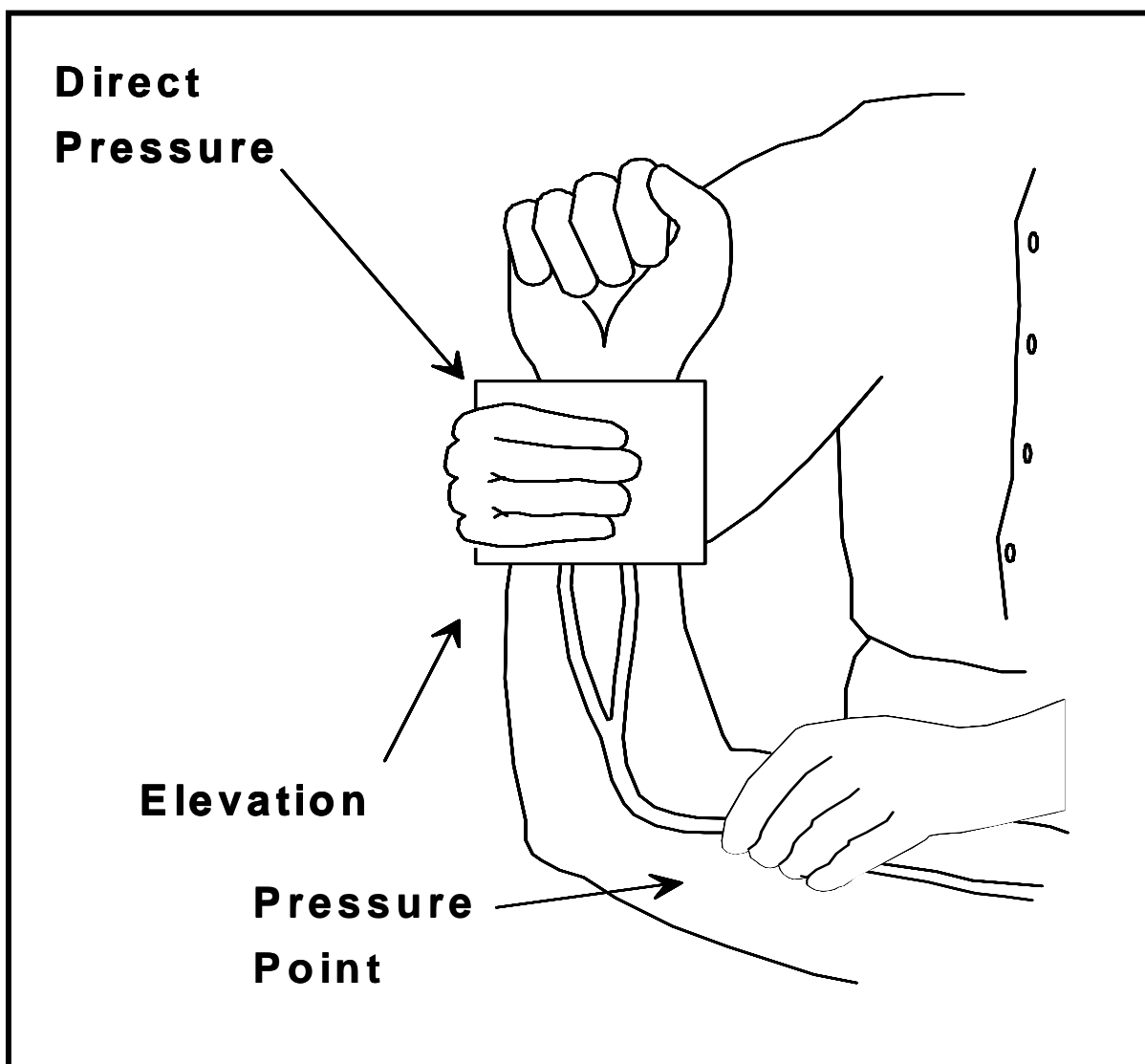
Unit Four: Disaster Medical Operations Part One
Visual Four: Femoral Pressure Point



**Visual of the femoral pressure point
in the upper thigh.**

Treating Life-Threatening Conditions (Continued)

Unit Four: Disaster Medical Operations Part One
Visual Five: Methods for Controlling Bleeding



Methods for controlling bleeding by using direct pressure on wound, elevation and pressure points.

Treating Life-Threatening Conditions (Continued)

G. Exercise: Controlling Bleeding

1. Purpose: This exercise allows you to practice the techniques for controlling bleeding. Bleeding must be controlled as quickly as possible so as not to endanger the victim's life from blood loss.

2. Instructions: Follow the steps below to conduct this exercise:

a. You should always wear your rubber gloves, goggles, and a mask as a protection against blood-borne pathogens, such as hepatitis and human immunodeficiency virus (HIV).

b. Work in pairs – one person will be the victim and the other the rescuer.

c. Victims should lie on the floor on their backs and close their eyes.

d. The rescuer should use direct pressure to control bleeding from a simulated wound on the right forearm just below the elbow. The rescuer should:

- Apply a pressure bandage.
- Elevate the arm.
- Repeat these two steps.
- Repeat the two steps for speed.

3. After the rescuer has made at least three attempts at using each technique, the victim and the rescuer should change roles.

III. Recognizing and Treating Shock

A. Shock is a disorder resulting from ineffective circulation of blood. Remaining in shock will lead to the death of:

1. Cells.
2. Tissues.
3. Entire organs.

B. The body will initially compensate for blood loss and mask the symptoms of shock. Therefore, it is important to continually evaluate patients for shock and monitor their condition. The main signs of shock that CERT members need to assess are:

1. Rapid and shallow breathing.
2. Capillary nail refill test* of greater than 2 seconds.
3. Failure to follow simple commands, such as, "Squeeze my hand."
4. Changes in skin color.

*The capillary nail refill test (CRT), also called a blanch test, is a quick test performed on the nail beds. It is an indicator of the amount of blood flow to tissue and dehydration. It is performed by applying pressure to the nail bed until it turns white indicating that the blood has been forced, or blanched, from the tissue. Once the tissue has blanched, pressure is removed and the time it takes for the blood to return to the tissue is measured. This is indicated by a pink color returning to the tissue. This test measures how well the vascular system is functioning in the body's extremities.

C. Although victims who are suffering from shock may be thirsty, they should not eat or drink anything, because they may also be nauseated.

Recognizing and Treating Shock (Continued)

Unit Four: Disaster Medical Operations Part One
Chart Three: Procedures for Controlling Shock

Step	Action
1	<ul style="list-style-type: none">○ Lay the victim on his or her back.○ Elevate the feet 6-10 inches above the level of the heart.○ Maintain an open airway.
2	<ul style="list-style-type: none">○ Control obvious bleeding.
3	<ul style="list-style-type: none">○ Maintain body temperature (e.g., cover the ground and the victim with a blanket if necessary).
4	<ul style="list-style-type: none">○ Avoid rough or excessive handling unless the rescuer and victim are in immediate danger.

D. Exercise: Treating Shock

1. Purpose: This exercise allows you to practice the steps for treating shock.
2. Instructions: Follow the steps below to complete this exercise:
 - a. Work in pairs of victim and rescuer.
 - b. The victims should lie on the floor on their backs if possible (or stay in their wheelchairs) and close their eyes.
 - c. The rescuer should treat the victim based on the scenario given by the Instructor.
 - d. The victim and the rescuer should then switch roles.

IV. Triage

A. Triage is a French term meaning “to sort.” During triage, victims are evaluated, sorted by the urgency of the treatment needed, and set up for immediate or delayed treatment. Triage was, in fact initiated by the military, and experience has shown that triage is an effective strategy in situations where:

1. There are many more victims than rescuers.
2. There are limited resources.
3. Time is critical.

B. Triage occurs as quickly as possible after a victim is located or rescued. During triage, victims’ conditions are evaluated and the victims are prioritized and labeled (tagged) into three categories:

1. Immediate (I): The victim has life-threatening (airway, bleeding, or shock) injuries that demand immediate attention to save his or her life; rapid, life-saving treatment is urgent.
2. Delayed (D): Injuries do not jeopardize the victim’s life. The victim may require professional care, but treatment can be delayed.
3. Dead (DEAD): No respiration after two attempts to open the airway. Because CPR is one-on-one care and is labor-intensive, CPR is not performed when there are many more victims than rescuers. Although it may be emotionally difficult to stop treatment after two attempts, remember that the CERT program goal is to do the greatest good for the greatest number of people.

C. From triage, victims are taken to the designated medical treatment areas: immediate care, delayed care, or morgue. If you have labeled your medical treatment areas using “I,” “D,” and “Morgue,” you can tell spontaneous volunteers to take the “I” victims to the “I” treatment area, and so on.

Triage (Continued)

D. Triage in a Disaster Environment

1. The rescuer's safety is paramount during triage. Wear proper protective equipment so as not to endanger your own health.
2. The general procedures for conducting triage are:

Step 1: Stop, Look, Listen, and Think. Before you start, stop and size up the situation by looking around and assessing the situation. THINK about your safety, capability, and limitations then decide if you will approach the situation and how.

Step 2: Conduct voice triage. Begin by calling out, "Emergency Response Team. If you can walk, come to the sound of my voice." If there are survivors who are ambulatory, instruct them to remain at a designated location, and continue with the triage operation. (If rescuers need assistance and there are ambulatory survivors, then these survivors should be asked to provide assistance.) These persons may also provide useful information about the location of the victims.

Step 3: Start where you stand, and follow a systematic route. Start with the closest victims and work outward in a systematic fashion.

Step 4: Evaluate each victim and tag them "I" (immediate), "D" (delayed), or "DEAD." Remember to evaluate the walking wounded.

Step 5: Treat "I" victims immediately by Initiating airway management, bleeding control and treatment for shock for "I" victims.

Step 6: Document triage results for:

- Effective deployment of resources.
- Information on the victims' locations.
- A quick record of the number of casualties by degree of severity.

Triage (Continued)

E. Performing a Triage Evaluation

1. If the victim passes all tests identified in chart four, found below, his or her status is "D." If the victim fails one test, his or her status is "I." Remember that everyone gets a tag. All victims tagged "I" get airway control, bleeding control, and treatment for shock.

Unit Four: Disaster Medical Operations Part One
Chart Four: Triage Procedure

Step	Procedures
1	<p>Check airway/breathing. At an arm's distance, shake the victim and shout. If the victim does not respond:</p> <ul style="list-style-type: none"> ○ Position the airway. ○ Look, listen, and feel. ○ Check breathing rate. Abnormally rapid respiration (above 30 per minute) indicates shock. Treat for shock and tag "I." ○ If below 30 per minute, then move to Step 2. ○ If the victim is not breathing after 2 attempts to open airway, then tag "DEAD."
2	<ul style="list-style-type: none"> ○ Check circulation/bleeding. ○ Take immediate action to control severe bleeding. ○ Check circulation using the blanch test for capillary refill. <ul style="list-style-type: none"> ○ Press on an area of skin until normal skin color is gone. <ul style="list-style-type: none"> A. good place to do this is on the palm of the hand or nail beds. Time how long it takes for normal color to return. ○ Treat for shock if normal color takes longer than 2 seconds to return, and tag "I."
3	<p>Check mental status. Give a simple command, such as "Squeeze my hand." Inability to respond indicates that immediate treatment for shock is necessary. Treat for shock and tag "I."</p>

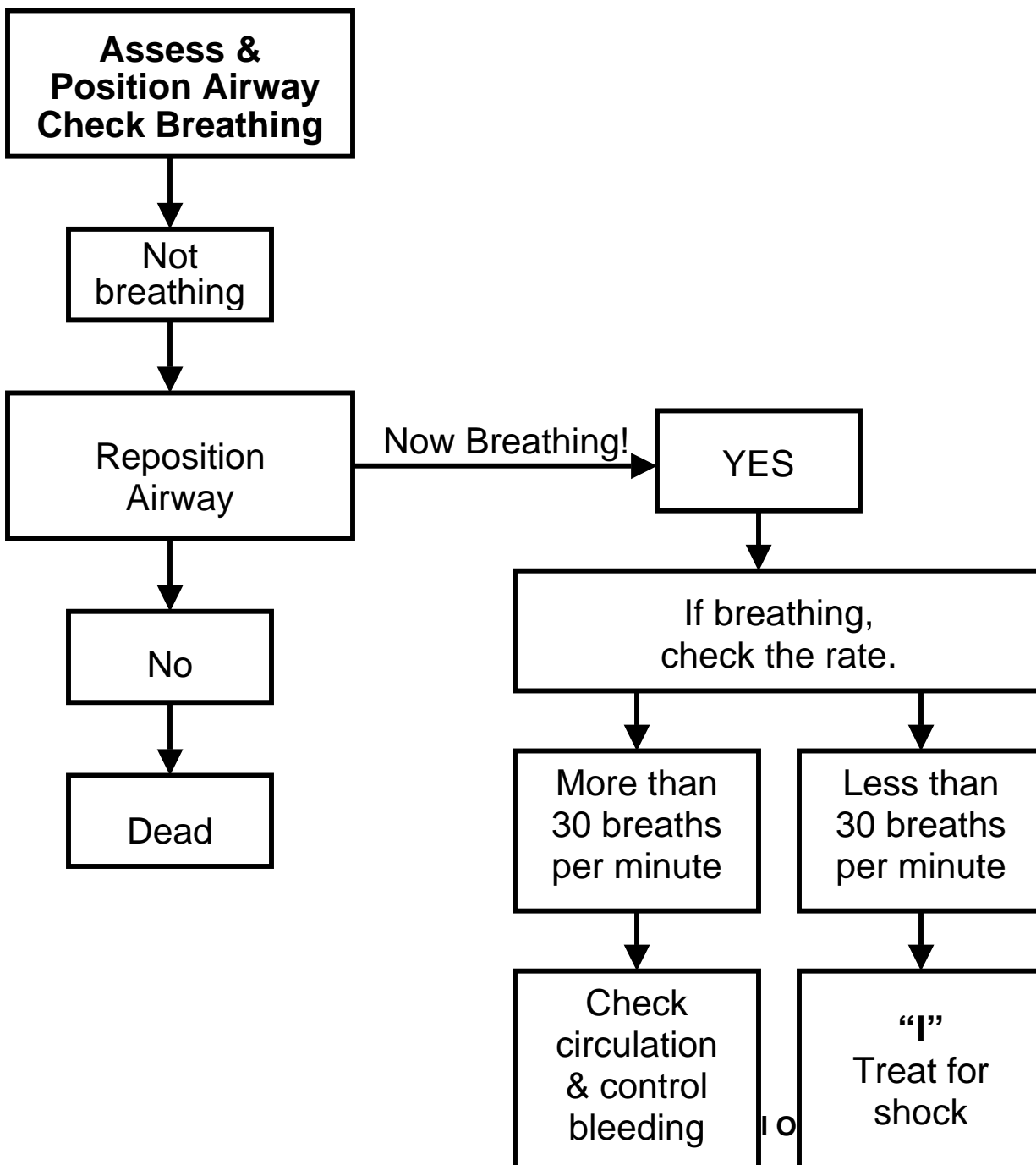
Triage (Continued)

Unit Four: Disaster Medical Operations Part One
Chart Five: Documenting Triage

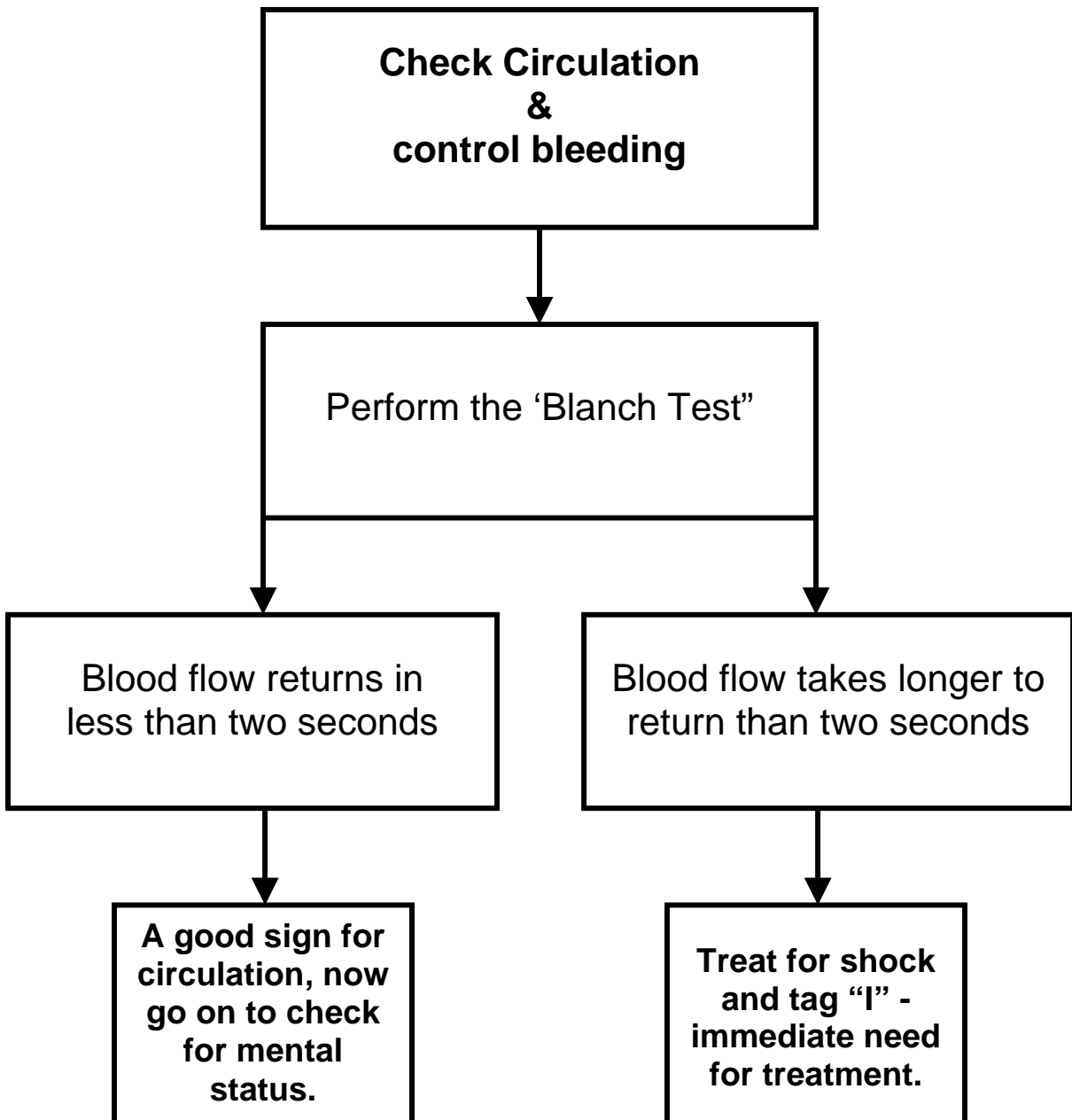
Your Name				
The Date				
Your Location				
Your Contact Information				
Triage Documentation				
Status	Location			
	A (Smith Middle School)	B (Grocery Store)	C (Movie Theater)	D (Airport)
I (Immediate)	5	6	1	3
D (Delayed)	16	11	4	0
Dead	3	0	0	12

Triage (Continued)

Unit Four: Disaster Medical Operations Part One
Chart Six: Triage Decision Flowchart
Step One of Three

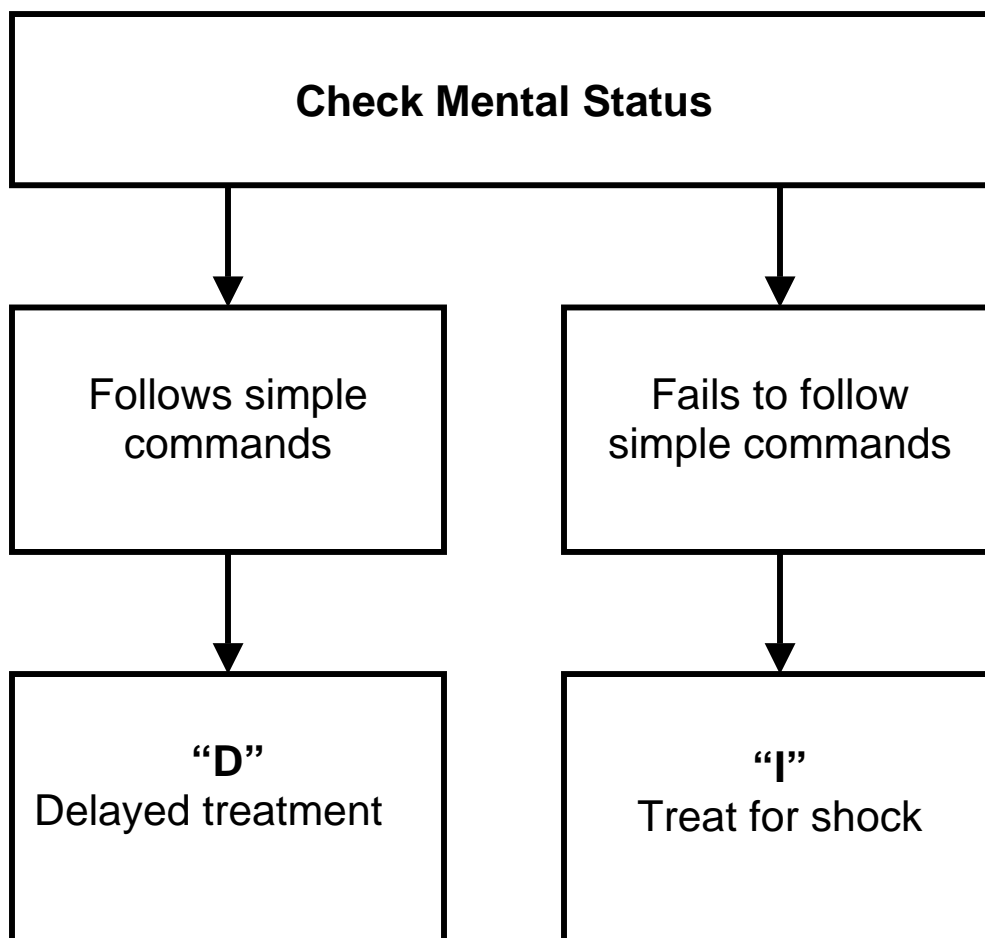


Unit Four: Disaster Medical Operations Part One
Chart Six: Triage Decision Flowchart
Step Two of Three



Triage (Continued)

Unit Four: Disaster Medical Operations Part One
Chart Six: Triage Decision Flowchart
Step Three of Three



Disaster Medical Operations pt. 1

Triage (Continued)

F. Time will be critical in a disaster.

1. You will not be able to spend very much time with any single victim.
2. Keep in mind that your role is to do good for the greatest amount of people

G. Maintain your triage skills.

1. Take advantage of local exercises as a means of maintaining your triage proficiency and to avoid the triage pitfalls.
2. Local exercises are held by volunteer organizations and local/state emergency management personnel.

H. Triage pitfalls include:

1. No team plan, organization, or goal.
2. Indecisive leadership.
3. Too much focus on one injury.
4. Treatment is performed rather than triage.

Triage (Continued)

I. Exercise: Conducting Triage

1. Purpose: This exercise is intended to allow you to practice conducting triage in a high-pressure situation.

2. Instructions: Follow the steps below to complete this exercise:

a. Work in 6-person groups. In each group, three participants will act as victims, and three will act as search and rescue team members, two rescuers and one runner.

b. The “victims” should select a card from the Instructor and tape it to their shirts.

c. The victims should arrange themselves within the designated “disaster” area.

d. The three “rescuers” will have 5 minutes to:

- Conduct triage on each of the victims and determine how each should be tagged and treated.
- Document the number of victims in each category of triage: immediate, delayed, dead.

Triage (Continued)

J. Unit Summary

1. CERT members' ability to open airways, control bleeding, and treat shock is critical to saving lives.
2. Use the Head-Tilt/Chin-Lift method for opening airways.
3. Control bleeding using direct pressure, elevation, and/or pressure points.
4. If there is a question about whether a victim is in shock, treat for shock.
5. Triage is a system for rapidly evaluating victims' injuries and prioritizing them for treatment. The procedure for conducting triage evaluations involves checking:
 - a. The airway and breathing rate.
 - b. Circulation and bleeding.
 - c. Mental status.
6. Disaster medical operations require careful planning, teamwork, and practice.
7. Take advantage of participating in community-wide disaster exercises whenever they are scheduled.

NEXT . . .

1. If your CERT class continues on the same day, take your break and return to this classroom.
2. If your CERT class continues on another day (next week or next month) your **Homework Assignment** is to
 - a. Read Unit 5: Disaster Medical Operations— Part 2
 - b. Bring a blanket, roller gauze, adhesive tape, and cardboard to the next session.

End of Unit Four

Unit Five: Disaster Medical Operations Part 2

I. Unit Overview and objectives

A. Unit Overview

1. When disaster victims are sheltered together for treatment one of the public health concerns is to avoid the spread of disease. This unit will address public health concerns related to sanitation, hygiene, and water purification.
2. Treatment areas must be established as soon as casualties are confirmed. This unit will explain how to organize disaster medical operations and establish treatment areas.
3. To do the most good for the greatest amount of people, individuals who receive CERT training will be able to employ basic treatments for wounds, fractures sprains and other common injuries. This unit will build upon information learned in Part 1 of Disaster Medical Operations (Unit 4).

B. Objectives

At the end of this unit participants should be able to:

1. List and explain the four major sub-functions of disaster medical operations.
2. Explain how to establish a Disaster Medical Treatment Area and know the functions and requirements of each.

Unit Overview (continued)

3. Understand how to perform head-to-toe patient evaluations to identify injuries that need immediate treatment.
4. Identify and classify burns and their treatments.
5. Apply splints to suspected fractures and sprains.

II. Public Health Considerations

A. When disaster victims are sheltered together for treatment, public health becomes a concern. Measures must be taken, both by CERT members and programmatically, to avoid the spread of disease. Primary public health measures include: maintaining proper hygiene, maintaining proper sanitation, and purifying water if necessary.

1. Maintaining Hygiene - Maintenance of proper hygiene is critical even under makeshift conditions. Some steps that individual workers can take to maintain hygiene are to:

- a. Wash hands frequently using soap and water. Hand washing should be thorough, at least 12 to 15 seconds, with an antibacterial scrub if possible.
- b. Wear medical (latex or hypoallergenic) gloves at all times. Change or disinfect gloves after examining and/or treating each patient. As explained earlier, under field conditions, workers can use rubber gloves that are sterilized between treating victims using bleach and water (1 part bleach to 10 parts water).
- c. Wear a mask and goggles. If possible, wear a mask that is rated "N95."
- d. Keep dressings sterile. Do not remove the over wrap from dressings and bandages until use. After opening, use the entire dressing or bandage, if possible.
- e. Avoid contact with body fluids. Thoroughly wash areas that come in contact with body fluids with soap and water or diluted bleach as soon as possible.

Disaster Medical Operations pt. 2

Public Health Considerations (Continued)

2. Maintaining Sanitation - Poor sanitation is also a major cause of illness, disease, and death. CERT medical operations personnel can maintain sanitary conditions by dealing with waste products appropriately.

- a. Controlling the disposal of bacterial sources (e.g., latex gloves, dressings, etc.)
- b. Putting waste products in plastic bags, tying off the bags, and marking them as medical waste. Keep medical waste separate from other trash, and dispose of it as hazardous waste.
- c. Appropriate disposal of human waste:
 - Burying
 - Keep away from water
 - Stored in covered buckets
 - Use of diapers and other waste collecting pads

3. Water Purification - Clean, sanitary, and drinkable water is referred to as potable water. Potable water supplies are often in short supply or are not available in a disaster.

- a. Purify water for drinking, cooking, and medical use by heating it to a rolling boil for 1 minute, or by using water purification tablets or unscented liquid bleach.
- b. Rescuers should not put anything on wounds other than purified water. The use of other solutions (e.g., hydrogen peroxide) on wounds must be the decision of trained medical personnel.

III. Functions of Disaster Medical Operations

A. There are four major sub-functions of disaster medical operations: triage, treatment, transport and morgue.

- 1. Triage: The initial assessment and sorting of victims for treatment based on the severity of their injuries
- 2. Treatment: The area in which disaster medical services are provided to victims.

Disaster Medical Operations pt. 2

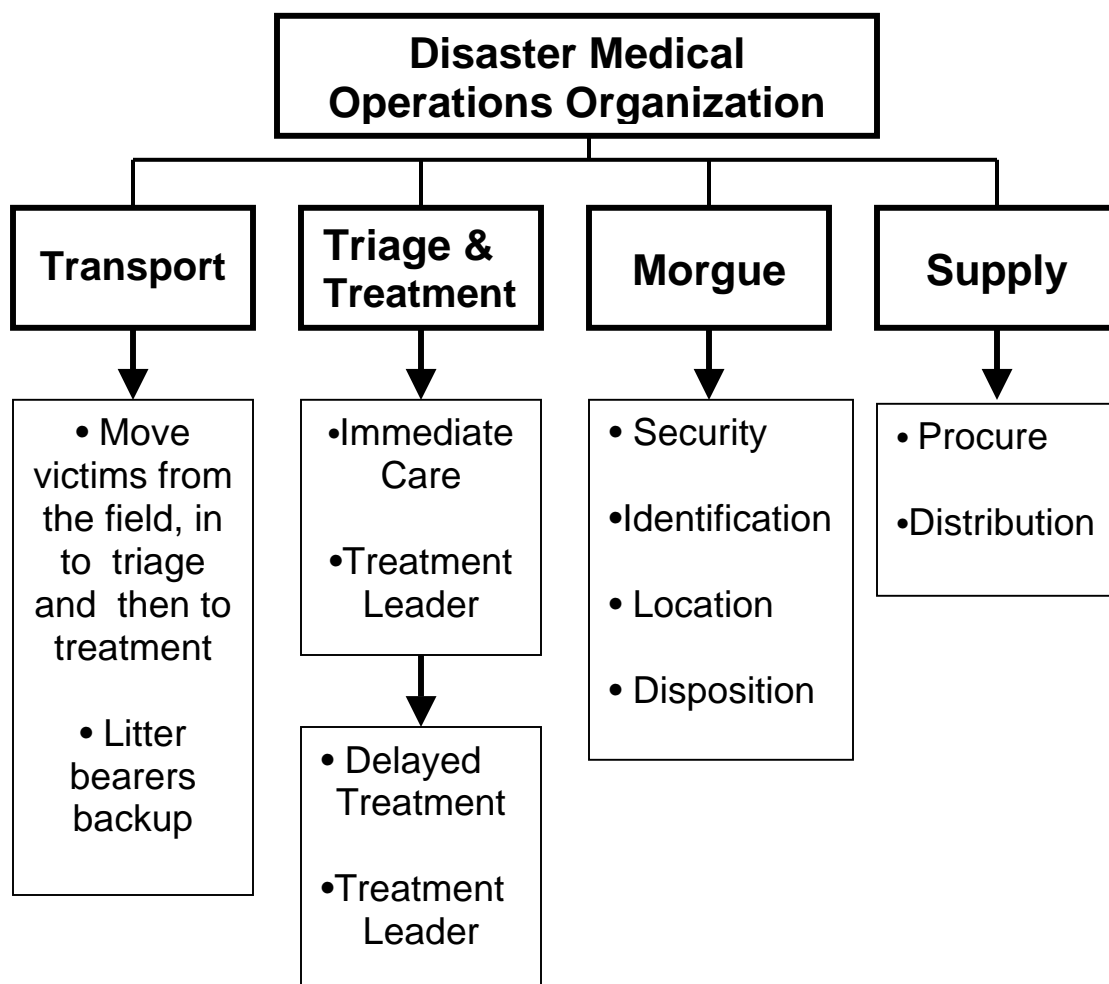
Functions of Disaster Medical Operations (Continued)

3. Transport: The movement of victims from the triage area to the treatment area. If professional help will be delayed, for efficiency of operations, victims can be transported to the treatment area by CERT members.

4. Morgue: The temporary holding area for victims who have died as a result of their injuries.

5. Supply: Is a holding area for materials procured

Unit Five: Disaster Medical Operations Part One Visual One: Disaster Medical Operations

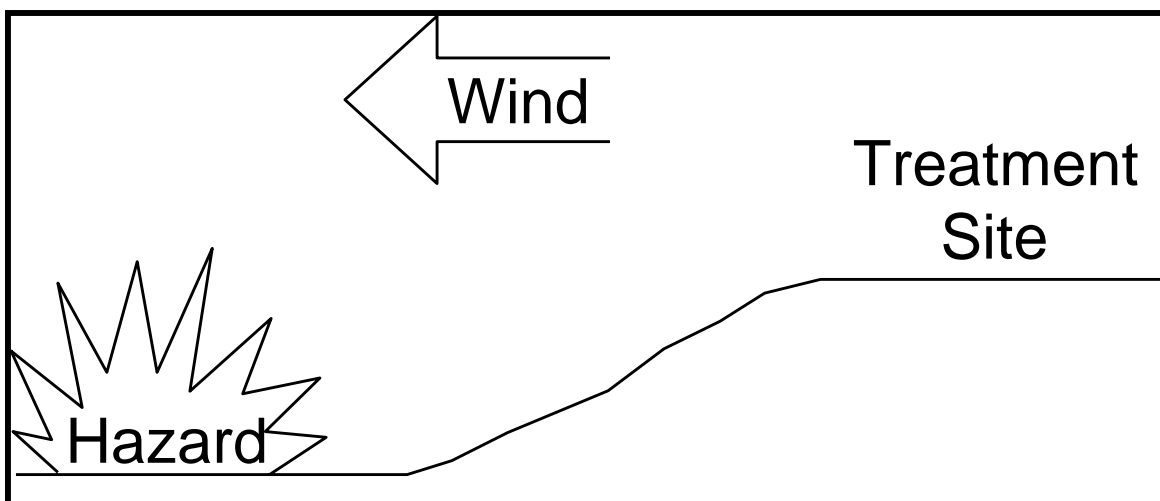


IV. Establishing Treatment Areas

A. Site selection for medical treatment - Because time is critical during a disaster, CERT medical operations personnel will need to select a site and set up a treatment area as soon as injured victims are confirmed. The treatment area is the location where the most advanced medical care possible will be given to victims. When selecting a site keep in mind it should have the following four qualities.

1. Be in a safe area, free of hazards and debris.
2. Be close to but upwind and uphill from the hazard zone(s).
3. Be accessible by transportation vehicles such as ambulances, trucks and helicopters.
4. It should be expandable.

Unit Five: Disaster Medical Operations Part Two Visual Two: Treatment Area Site Selection



When selecting a Treatment Area attempt to find a place that is both uphill and upwind from the hazard.

Disaster Medical Operations pt. 2

Establishing Treatment Areas (Continued)

B. Treatment Area Layout

1. The treatment area must be protected and clearly marked using a ground cover or tarp. A clearly marked treatment area will help people transport victims to the correct location. Signs should identify the subdivisions of the area:

- a. "I" for Immediate care.
- b. "D" for Delayed care.
- c. "DEAD" for the morgue.

2. The *Immediate Care* and *Delayed Care* divisions should be relatively close to each other to allow:

- a. Verbal and visual communication between workers in the two areas.
- b. Shared access to medical supplies which should be securely stored in a central location.
- c. Easy transfer of patients whose status has changed.

3. Patients in the treatment area should be positioned in a head-to-toe configuration with two to three feet of space between victims.

This system will provide:

- a. Effective use of space.
- b. Effective use of available personnel.
- c. As a worker finishes one head-to-toe assessment, he or she turns around and finds the head of the next patient.

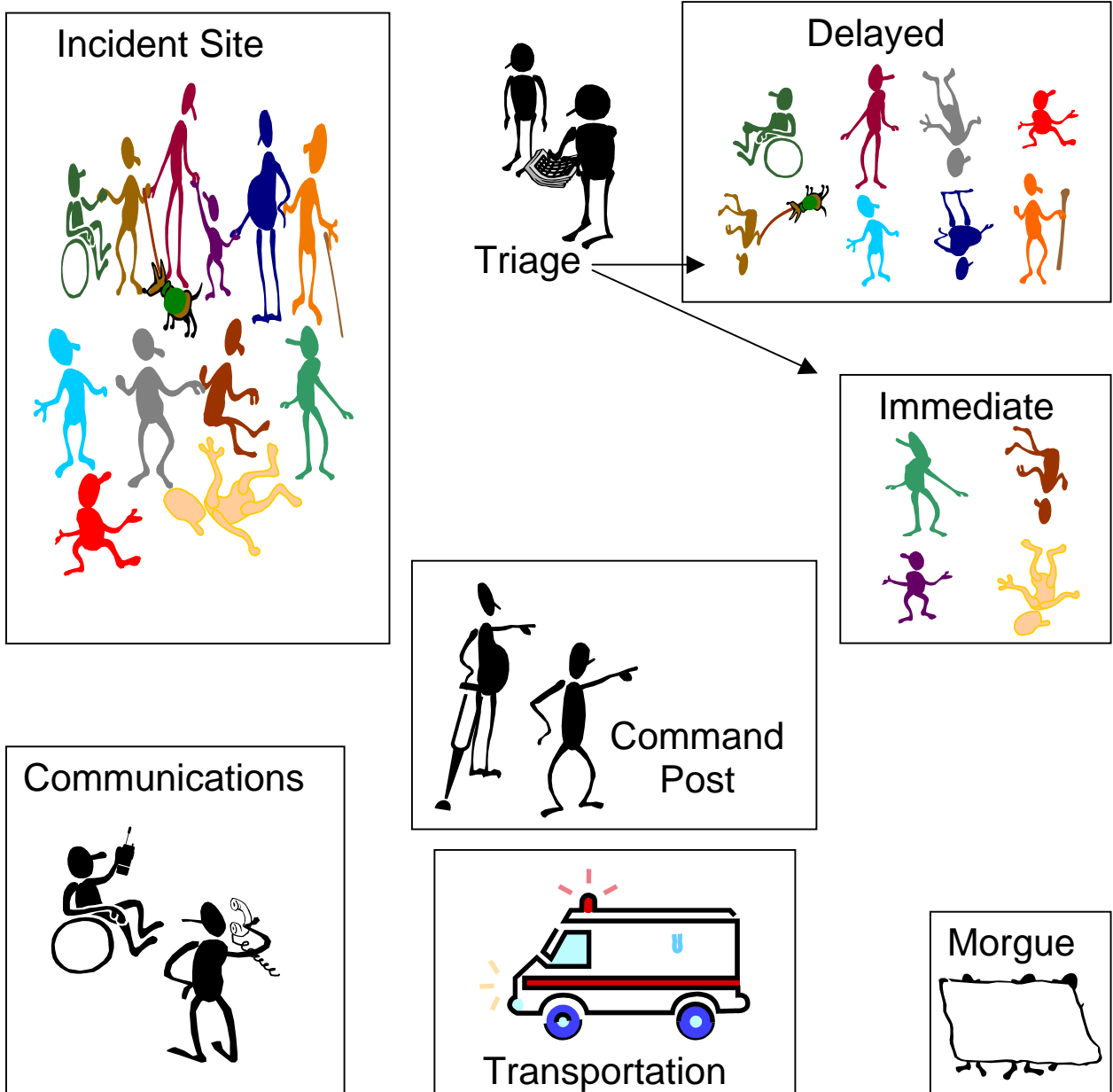
Disaster Medical Operations pt. 2

Establishing Treatment Areas (Continued)

Treatment Area Layout showing organization for the incident site, command post, triage, communications, and morgue

Unit Five: Disaster Medical Operations Part Two Visual Three: Treatment Area* Layout

*Service animals are permitted in these areas



Disaster Medical Operations pt. 2

Establishing Treatment Areas (Continued)

C. Treatment Area Organization

1. The CERT team must assign leaders to maintain control in each of the medical treatment areas. The function of these leaders is to:

- a. Ensure orderly victim placement.
- b. Direct assistants to conduct head-to-toe assessments.
- c. Thoroughly document victims in the treatment area, including:
 - Available identifying information.
 - Description
 - Clothing.
 - Injuries.
 - Treatment.
 - Transfer location.

D. Treatment Area Planning

1. If you are a member of a Community Emergency Response Team that will train and stay together as a team that will be called out to respond together, you can make certain plans before disaster strikes, including:

- a. Assign personnel to specific roles in the treatment area.
- b. Gather setup equipment that might be needed such as ground covers, tarps and signs for identifying treatment divisions (immediate, delayed, morgue).
- c. Take part in practice exercises so that you can develop a good operational plan and practice rapid treatment area setup.

V. Conducting Head-to-Toe Assessments

A. The first steps that you will take when working with a victim will be to conduct a triage and rapid treatment. During triage, you looked for 'the killers': airway obstruction, excessive bleeding and signs of shock. After all victims in an area have been triaged, CERT members will begin a thorough head-to-toe assessment of the victim's condition. A head-to-toe assessment goes beyond 'the killers' to try to gain more information to determine the nature of the victim's injury. During a head-to-toe assessment, look for the following:

1. Bruising.
2. Swelling.
3. Severe pain.
4. Disfigurement.

B. A head-to-toe assessment can be done in place in a lightly damaged building. If the building is moderately damaged, the victim should be moved to a safe zone or to the treatment area for the head-to-toe assessment. Wear safety equipment when conducting head-to-toe assessments.

C. The objectives of a head-to-toe assessment are to:

1. Determine, as clearly as possible, the extent of injuries.
2. Determine what type of treatment is needed.
3. Document injuries.

D. If the victim is conscious, CERT members should always ask permission to conduct the assessment. **The victim has the right to refuse treatment.**

E. Head-to-toe assessments should be:

1. Conducted on all victims, even those who seem alright.
2. Everyone gets a tag.
3. Verbal (if the patient or assessor is able to speak).
4. Hands-on (if the patient can tolerate touch)

Disaster Medical Operations pt. 2

Conducting Head-to-Toe Assessments (Continued)

F. Whenever possible, you should ask the person about any injuries, pain, bleeding, or other symptoms. Pay careful attention: look, listen, and feel for anything unusual.

G. Conduct head-to-toe assessments systematically, checking body parts from the top to the bottom for continuity of bones and soft tissue injuries in the following order:

1. Head
2. Neck
3. Shoulders
4. Chest
5. Arms
6. Abdomen
7. Pelvis
8. Legs
9. Back

H. Completing the assessment in the same way every time will make the procedure quicker and more accurate.

I. Check your own gloved hands for patient bleeding as you complete the head-to-toe assessment.

J. Perform an entire assessment before beginning any treatment. Also, treat all unconscious victims as if they have a spinal injury.

VI. Closed-Head, Neck, and Spinal Injuries

A. When conducting head-to-toe assessments, rescuers may come across victims who have or may have suffered closed-head, neck, or spinal injuries. **The main objective when CERT members encounter suspected injuries to the head or spine is to do no harm.** You should minimize movement of the head and spine, while treating any other life-threatening conditions.

B. The signs of a closed-head, neck, or spinal injury most often include:

1. Change in consciousness.
2. Inability to move one or more body parts.
3. Severe pain or pressure in the head, neck, or back.
4. Tingling or numbness in extremities.
5. Difficulty breathing or seeing.
6. Heavy bleeding, bruising, or deformity of the head or spine.
7. Blood or fluid in the nose or ears.
8. Bruising behind the ear.
9. "Raccoon" eyes (bruising around eyes).
10. "Uneven" pupils.
11. Seizures.
12. Nausea or vomiting.
13. Victim found under collapsed building material or heavy debris.

If the victim is exhibiting any of these signs, he or she should be treated as having a closed-head, neck, or spinal injury.

Disaster Medical Operations pt. 2

Closed-Head, Neck, and Spinal Injuries (Continued)

C. Keep the spine in a straight line when doing the head-to-toe assessment. In an extreme emergency, ideal equipment is rarely available, so the CERT members may need to be creative by:

1. Looking for materials that can be used as a backboard—a door, desktop, building materials—anything that might be available.
2. Looking for items that can be used to stabilize the head on the board—towels, draperies, or sandbags—by tucking them snugly on either side of the head to immobilize it.

VII. Exercise: Conducting Head-to-Toe Assessments

A. Purpose: This exercise allows you to practice conducting head-to-toe assessments.

B. Instructions: Follow the steps below to complete this exercise:

1. Work in three-person teams of one victim and two rescuers.
2. The victim should lie on the floor on their back and with closed eyes. If the victim can not lie on the floor, remain in their chair or wheelchair with closed eyes.
3. The rescuers should conduct a head-to-toe assessment on the victim following the procedures explained in this unit.
4. After the rescuers have made at least two observed head-to-toe assessments, the victim and rescuers should change roles.

VIII. Treating Burns

A. The objectives of first aid treatment for burns are to: cool the burned area and reduce the risk of infection.

B. Burns may be caused by heat, chemicals, electrical current, and radiation. The severity of a burn depends on the:

1. Temperature of the burning agent.
2. Period of time that the victim was exposed.
3. Area of the body that was affected.
4. Size of the area burned.
5. Depth of the burn.

C. Burn Classifications - The skin has three layers the: epidermis, dermis and subcutaneous. Burns are classified as first, second, or third degree. Depending on their severity, burns may affect all three layers of skin.

1. First Degree Burn - The epidermis, or outer layer of skin, contains nerve endings and is penetrated by hairs.
2. Second Degree Burn - The dermis, or middle layer of skin, contains blood vessels, oil glands, hair follicles, and sweat glands.
3. Third Degree Burn - The subcutaneous layer, or innermost layer, contains blood vessels and overlies the muscle and skin cells.

Treating Burns (Continued)

Unit Five: Disaster Medical Operations, Part 2
Chart One: Burn Classifications

Burn Classifications		
Classification	Skin Layers Affected	Signs
1st Degree	Epidermis (superficial)	<ul style="list-style-type: none"> ○ Reddened, dry skin ○ Pain ○ Possible Swelling
2nd Degree	Epidermis Partial destruction of dermis	<ul style="list-style-type: none"> ○ Reddened, blistered skin ○ Wet appearance ○ Pain ○ Possible Swelling
3rd Degree (Full Thickness Burns)	Complete destruction of epidermis and dermis Possible subcutaneous damage (destroys all layers of skin and some or all underlying structures)	<ul style="list-style-type: none"> ○ Whitened, leathery, or charred (brown or black) ○ Painful or relatively painless

Treating Burns (Continued)

D. Guidelines for treating burns include:

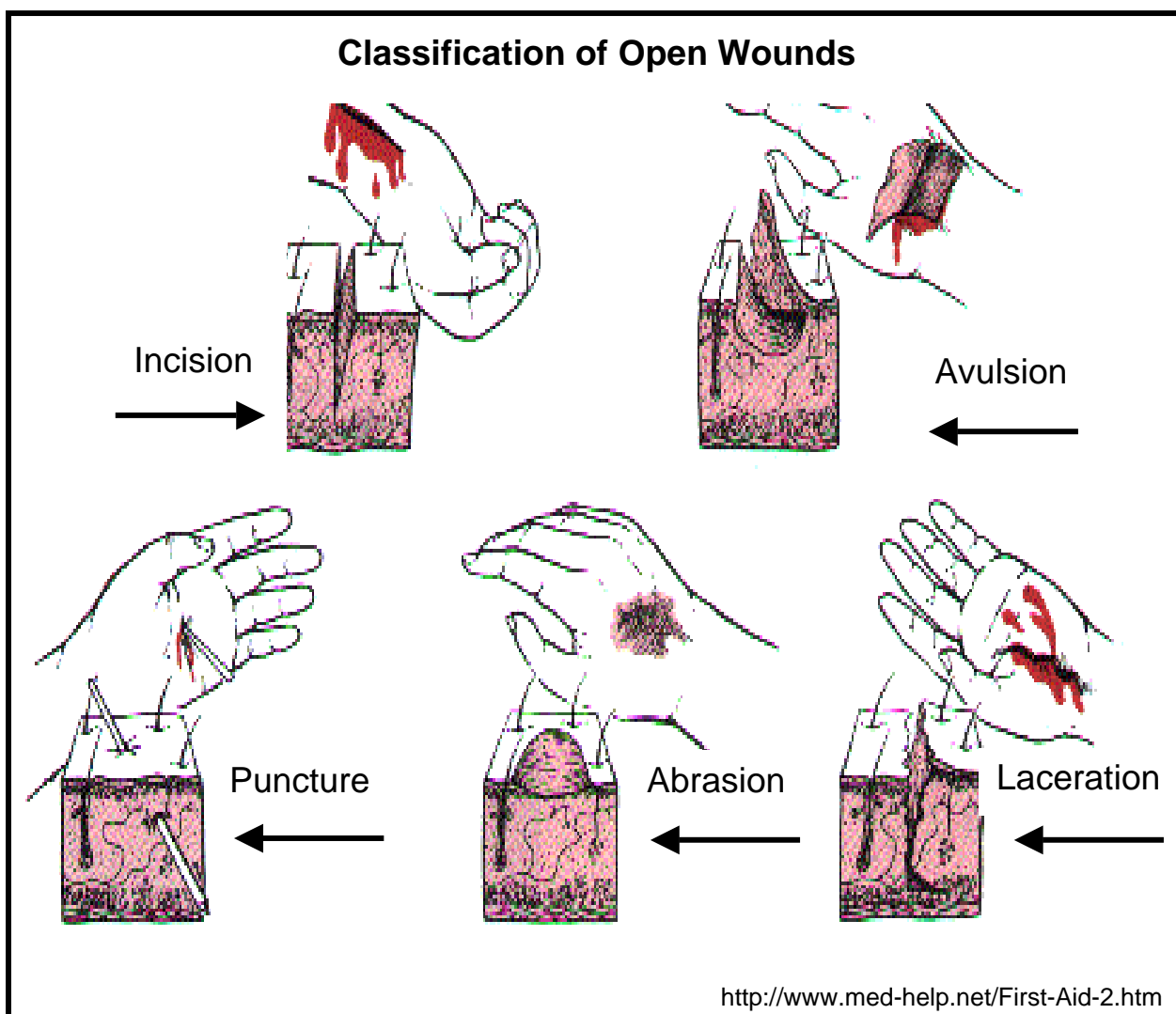
1. Removing the victim from the fire or burning source.
2. Put out any remaining flames and remove smoldering clothing unless it is stuck to the skin.
3. Cooling skin or clothing, if they are still hot, by immersing them in cool water for not more than 1 minute or covering with clean compresses that have been wrung out in cool water.
 - a. Cooling sources include water from the bathroom or kitchen; garden hose; and soaked towels, sheets, or other cloths.
 - b. Infants, young children, older persons, and persons with severe burns, are more susceptible to hypothermia. Therefore, rescuers should use caution when applying cool dressings on such persons. A rule of thumb is do not cool more than 15 percent of the body surface area (the size of one arm) at once, to prevent hypothermia.
4. Treat all victims of third-degree burns for shock.
5. Covering loosely with dry (or moist, based on local protocols), sterile dressings to keep fluids in and germs out.
6. Elevating burned extremities higher than the heart.
7. **Do not** use ice. Ice causes vessel constriction.
8. **Do not** apply antiseptics, ointments, or other remedies.
9. **Do not** remove shreds of tissue, break blisters, or remove adhered particles of clothing. (Cut burned-in clothing around the burn.)

IX. Wound Care

A. There are many injuries that need treatment after a disaster. This section on wound care will offer instruction on how to treat the most common types of open wounds: amputations, impaled objects, fractures, dislocations, sprains and strains, nasal injuries and hypothermia.

1. Open Wounds- can be classified as: incision, avulsion, puncture, abrasion and laceration. These are all different types of wounds to the skin that produce bleeding.

Unit Five: Disaster Medical Operations, Part 2 Visual Four: Classification of Open Wounds



Disaster Medical Operations pt. 2

Wound Care (Continued)

A. The objective of dealing with the many types of open wounds (incisions, avulsions, punctures, abrasions, and lacerations) is to focus on cleaning and bandaging to control infection:

1. Cleaning wounds - Wounds should be cleaned by irrigating with water, flushing with a mild concentration of soap and water, then irrigating with water again. You should not scrub the wound. A bulb syringe is useful for irrigating wounds. In a disaster, a turkey baster may also be used.

2. When the wound is thoroughly cleaned, you will need to apply a dressing and bandage to help keep it clean and control bleeding. The difference between a dressing and a bandage is:

- a. A dressing is applied directly to the wound.

- b. A bandage holds the dressing in place.

3. Continuously bleeding wounds - If a wound is still bleeding, the bandage should place enough pressure on the wound to help control bleeding without interfering with circulation. If there is active bleeding, such as the dressing is soaked with blood, redress over the existing dressing and maintain pressure and elevation to control bleeding.

4. Short-term follow-up care for wounds - In the absence of active bleeding, dressings must be removed and the wound must be flushed and checked for signs of infection at least every 4 to 6 hours. If necessary based on reassessment and signs of infection, change the treatment priority.

5. Signs of possible infection include:

- a. Swelling around the wound site.

- b. Discoloration.

- c. Discharge from the wound.

- d. Red striations from the wound site, (striations are thin red lines in patterns that extend out from the area of the wound like tree branches).

X. Amputations

A. An amputation is the process of cutting off a limb or other appendage, either by surgical operation or by traumatic injury. The objective in treating an amputation is to control bleeding and treating for shock.

1. Controlling bleeding – follow the procedures explained in the above-mentioned section on wound care. Section IX Wound Care in Unit 4: Disaster Medical Operations part 2, page 17.

2. Treating shock – follow the procedures explained in the previously covered material in III. Recognizing and Treating Shock, Unit 3: Disaster Medical Operations part 1, page 14.

B. When the severed body part can be located, CERT members should: Save tissue parts, wrap in clean material and place in a plastic bag, if available.

1. Keep the tissue parts cool.

2. Keep the severed part with the victim.

C. Impaled Objects - You may also encounter some victims who have foreign objects lodged in their bodies, usually as the result of flying debris during the disaster. When a foreign object is impaled in a patient's body, you should:

1. Immobilize the affected body part.

2. **Do not** attempt to move or remove the object unless it is obstructing the airway.

3. Try to control bleeding at the entrance wound without placing undue pressure on the foreign object.

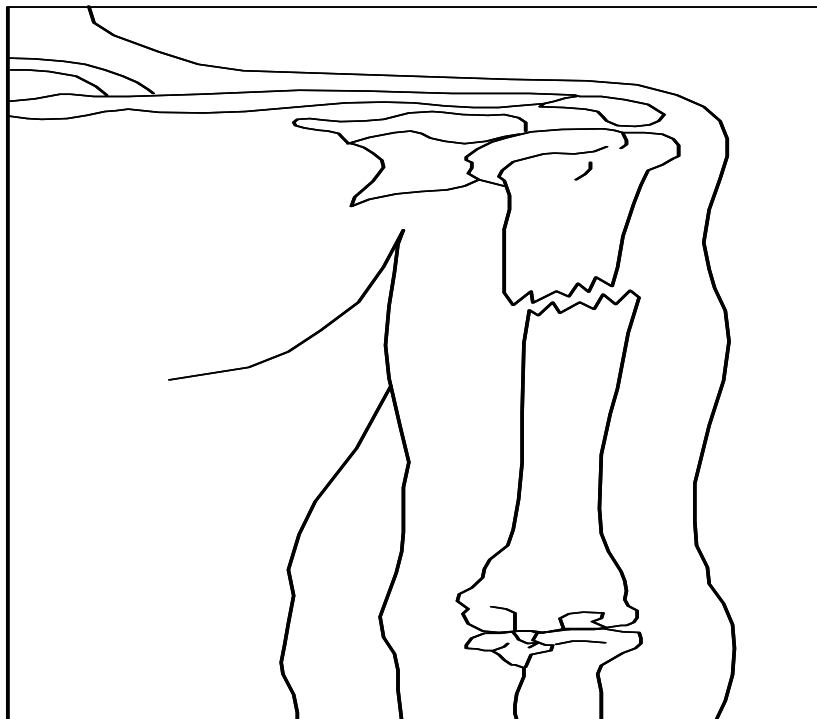
4. Clean and dress the wound. Wrap bulky dressings around the object to keep it from moving

XI. Treating Fractures, Dislocations, Sprains and Strains

A. The objective when treating a suspected fracture, sprain, or strain is to immobilize the injury and the joints immediately above and below the injury site.

B. It is difficult to distinguish among fractures, sprains, or strains, if you are uncertain of the type of injury, treat the injury as a fracture which is a complete break, a chip, or a crack in a bone. There are several types of fractures: closed, open, displaced and nondisplaced.

Unit Five: Disaster Medical Operations, Part 2
Visual Five: A Closed Fracture

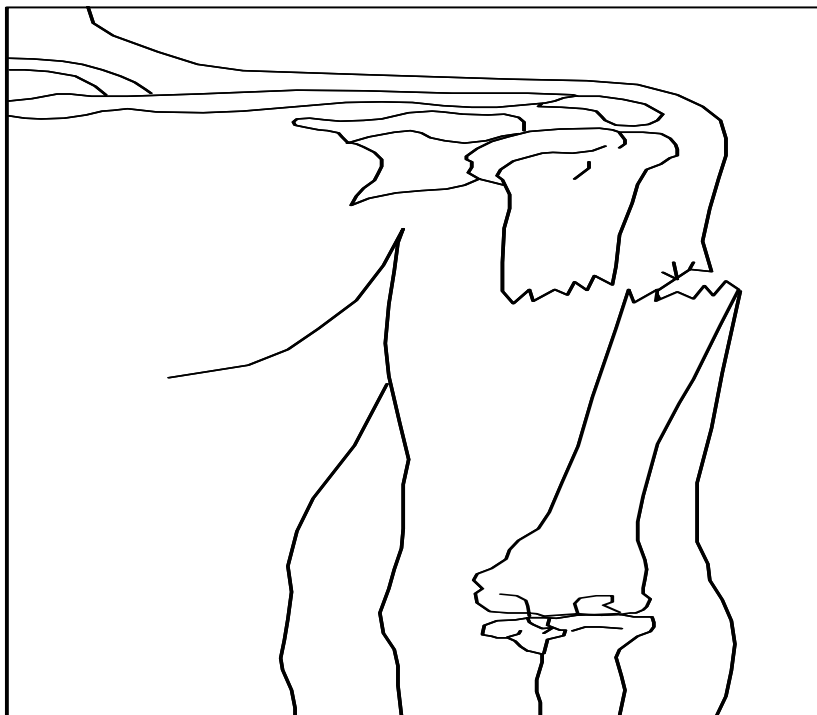


A closed fracture is one in which the fracture does not puncture the skin.

Disaster Medical Operations pt. 2

Treating Fractures, Dislocations, Sprains and Strains (Continued)

Unit Five: Disaster Medical Operations, Part 2 Visual Six: An Open Fracture

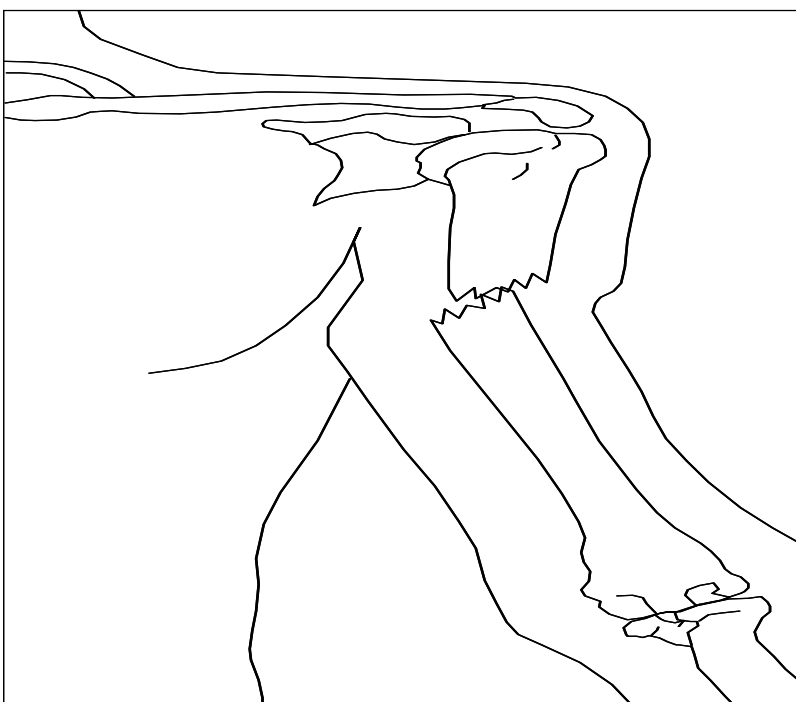


An open fracture is one in which the fracture causes the bone to protrude through the skin.

Disaster Medical Operations pt. 2

Treating Fractures, Dislocations, Sprains and Strains (Continued)

Unit Five: Disaster Medical Operations, Part 2 Visual Seven: A Displaced Fracture

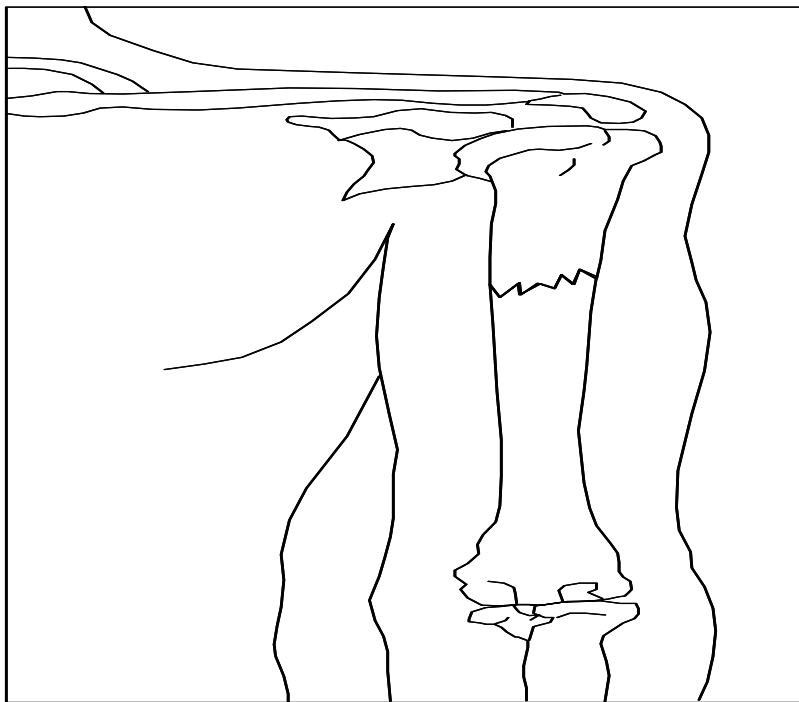


A displaced fracture is one in which the fractured bone is no longer aligned

Disaster Medical Operations pt. 2

Treating Fractures, Dislocations, Sprains and Strains (Continued)

Unit Five: Disaster Medical Operations, Part 2 Visual Eight: A Nondisplaced Fracture



A nondisplaced fracture is one in which the fractured bone remains aligned

Disaster Medical Operations pt. 2

Treating Fractures, Dislocations, Sprains and Strains (Continued)

1. Closed Fracture – (see visual 5 on page 19 of Unit 4) A closed fracture is a broken bone with no associated wound. First aid treatment for closed fractures may require only splinting.

2. Open Fracture – (see visual 6 on page 20 of Unit 4) An open fracture is a broken bone with some kind of wound that allows contaminants to enter into or around the fracture site. Therefore, they are a higher priority and need to be checked more frequently.

a. When treating an open fracture:

- Do not draw the exposed bone ends back into the tissue.
- Do not irrigate the wound.

b. You should:

- Cover the wound with a sterile dressing.
- Splint the fracture without disturbing the wound.
- Place a moist 4" x 4" dressing over the bone end to keep it from drying out.

3. Displaced Fracture – (see visual 7 on page 21 of Unit 4) Displaced fractures may be described by the degree of displacement of the bone fragments. If the limb is angled, then there is a displaced fracture.

4. Nondisplaced Fracture – (see visual 8 on page 21 of Unit 4) Nondisplaced fractures are difficult to identify, with the main signs being pain and swelling. Treat a suspected fracture as a fracture until professional treatment is available.

Disaster Medical Operations pt. 2

Treating Fractures, Dislocations, Sprains and Strains (Continued)

C. Dislocations – are another common injury in emergencies. A dislocation is an injury to the ligaments around a joint that is so severe that it permits a separation of the bone from its normal position in a joint.

1. The signs of a dislocation are similar to those of a fracture, and a suspected dislocation should be treated like a fracture.
2. You should not try to relocate a suspected dislocation. Immobilize the joint until professional medical help is available.

D. Sprains – A sprain involves a stretching or tearing of ligaments at a joint and is usually caused by stretching or extending the joint beyond its normal limits. A sprain is considered a partial dislocation, although the bone either remains in place or is able to fall back into place after the injury.

1. The most common signs of a sprain are:
 - Tenderness at the site of the injury.
 - Swelling and/or bruising.
 - Restricted use, or loss of use.
 - The signs of a sprain are similar to those of a nondisplaced fracture. Therefore, do not try to treat the injury other than by immobilization and elevation.

E. Strains – involve a stretching and/or tearing of muscles or tendons. Strains most often involve the muscles in the neck, back, thigh, or calf. In some cases, strains may be difficult to distinguish from sprains or fractures. When uncertain whether an injury is a strain, sprain, or fracture, treat the injury as if it is a fracture.

XII. Splinting

A. A splint is a device made of rigid material used to keep a broken bone or injured body part from moving. Splinting is the most common procedure for immobilizing an injury. There are several forms of material you can use to create a splint in times of emergency.

1. Cardboard is the material typically used for “makeshift” splints but a variety of materials can be used, including:
2. Soft materials. Towels, blankets, or pillows, tied with bandaging materials or soft cloths.
3. Rigid materials. A board, metal strip, folded magazine or newspaper, or other rigid item can be used to create a splint.
4. Anatomical splints may also be created by securing a fractured bone to an adjacent unfractured bone. Anatomical splints are usually reserved for fingers and toes but, in an emergency, legs may also be splinted together.

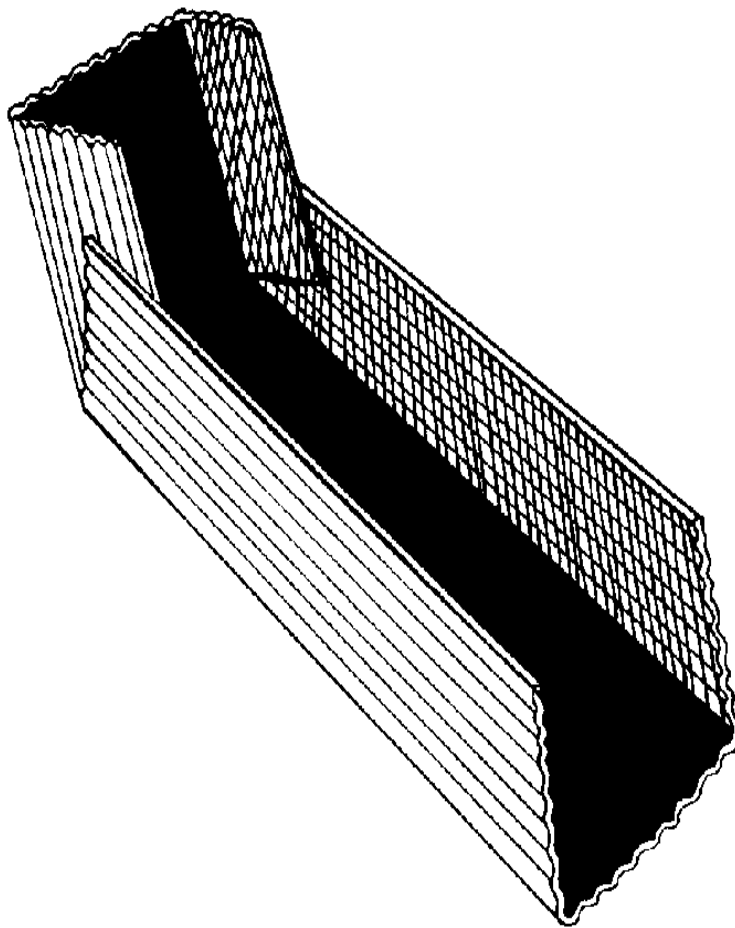
B. The guidelines for splinting include:

1. Support the injured area above and below the site of the injury, including the joints.
2. If possible, splint the injury in the position that you find it. Don't try to realign bones or joints.
3. After splinting, check for proper circulation by assessing warmth, feeling, and color.
4. With this type of injury, there will be swelling. You should remove restrictive clothing, shoes, and jewelry when necessary to prevent these items from acting as tourniquets.

C. Exercise: Splinting

1. Instructions: Follow the steps below to complete this exercise which will allow you to practice the procedures for splinting:
2. Working in three-person teams, one person will be the victim and two persons will be the rescuers. Victims should lie on the floor on their backs or sit in a chair. The rescuer should apply a splint on the victim's upper arm using the procedure demonstrated earlier. Then, the rescuer should apply a splint to the victim's lower leg.
3. The victim and the rescuers should change roles.

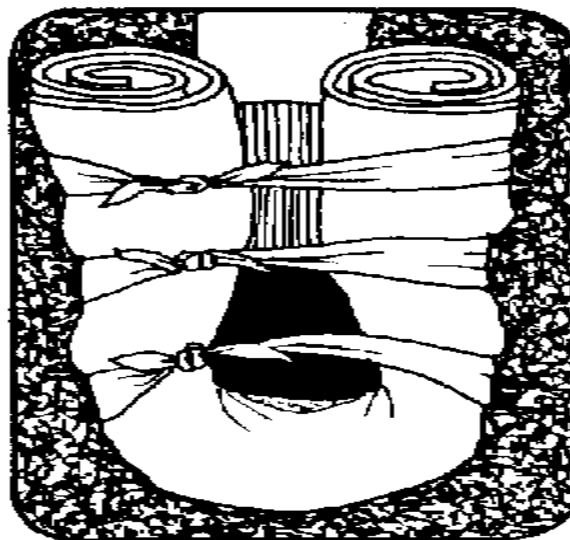
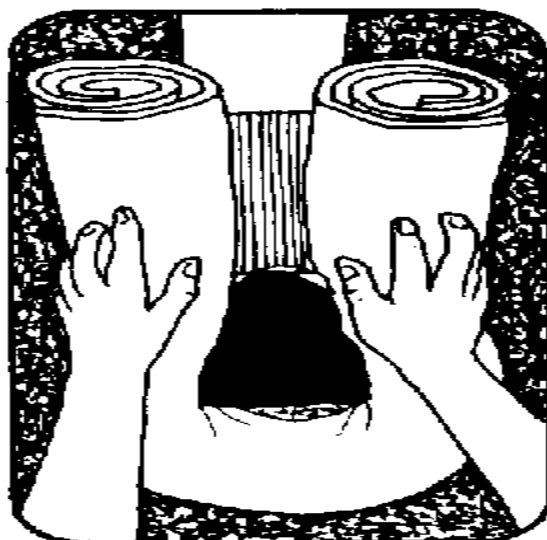
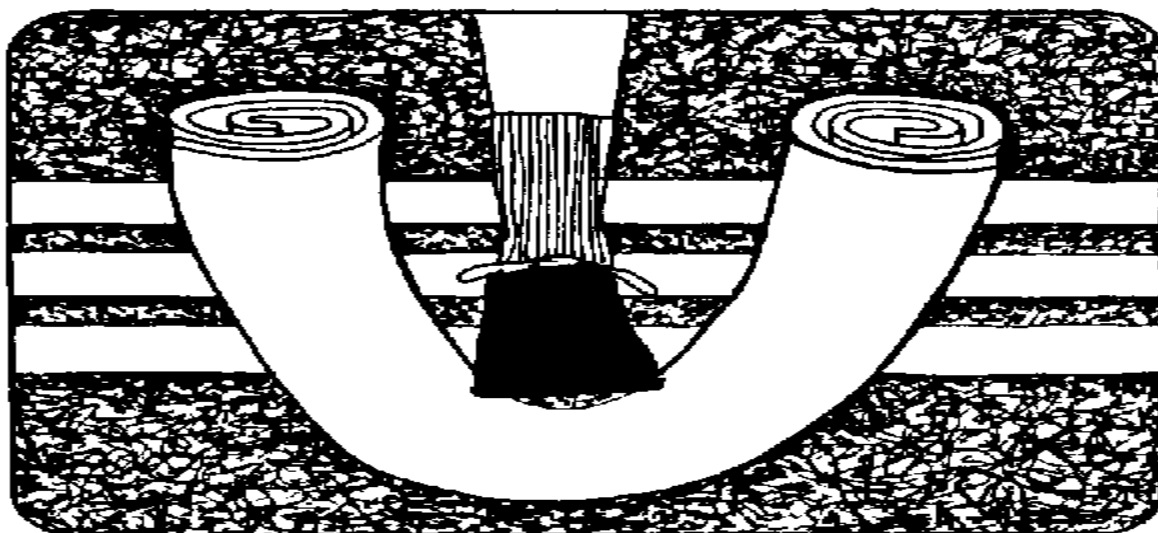
Unit Five: Disaster Medical Operations, Part 2
Visual Nine: A Cardboard Splint



Cardboard Splint where the edges of the cardboard are turned up to form a “mold” in which the injured limb can rest.

Splinting (Continued)

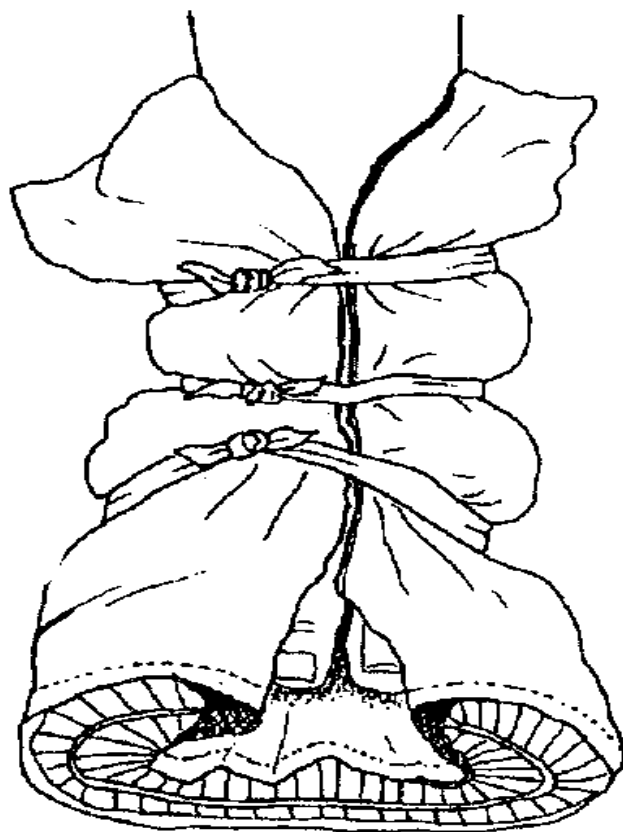
Unit Five: Disaster Medical Operations, Part 2
Visual Ten: Splinting Using A Towel



Splinting using a towel, in which the towel is rolled up, wrapped around the limb and then tied in place

Splinting (Continued)

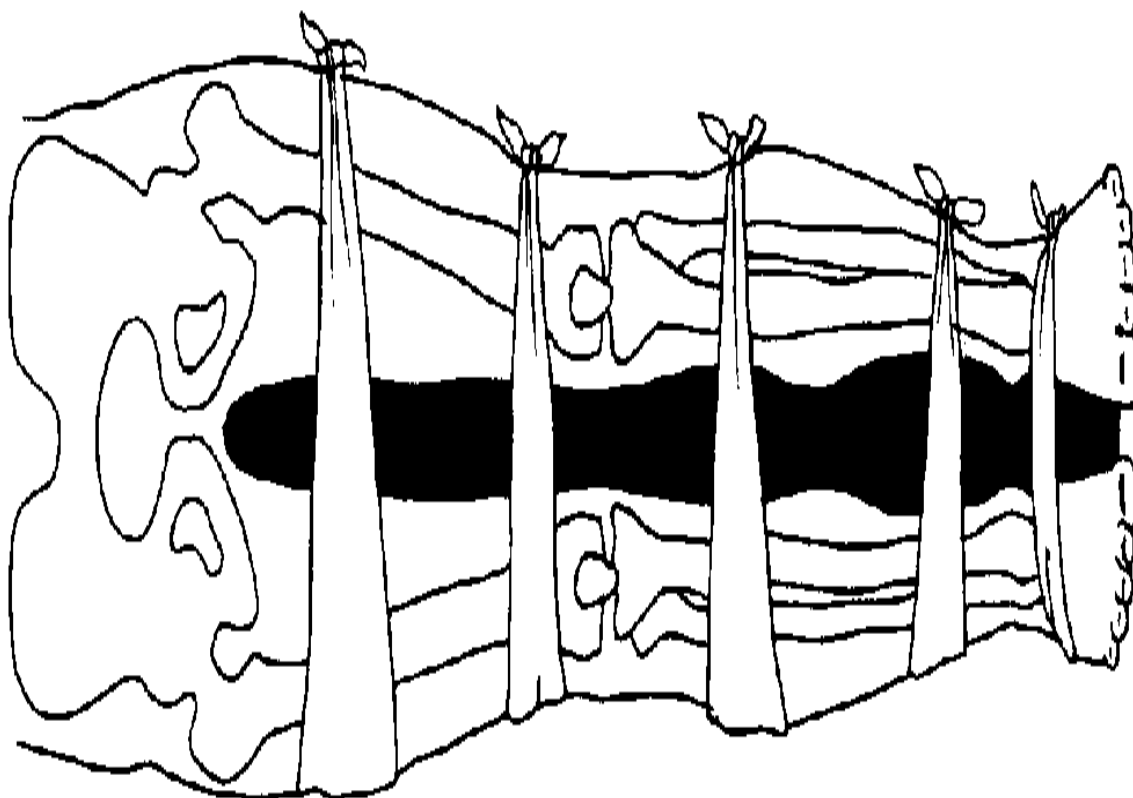
Unit Five: Disaster Medical Operations, Part 2
Visual Eleven: Pillow Splint



This is a pillow splint showing how a pillow can be wrapped and then tied to secure the limb.

Splinting (Continued)

Unit Five: Disaster Medical Operations, Part 2
Visual Twelve: Splinting Using a Blanket



Splinting using a blanket in which the victim's legs are immobilized by tying blankets at intervals from mid-thigh to the feet.

XIII. Nasal Injuries

A. Bleeding from the nose can be caused by:

1. Blunt force to the nose.
2. A skull fracture.
3. Nontrauma-related conditions such as sinus infections, high blood pressure, and bleeding disorders.

B. A large blood loss from a nosebleed can lead to shock. Actual blood loss may not be evident because the victim will swallow some amount of blood. Victims who have swallowed large amounts of blood may become nauseated and vomit.

C. The methods for controlling nasal bleeding include:

1. Pinching the nostrils together.
2. Putting pressure on the upper lip just under the nose.

D. While treating for nosebleeds, you should:

1. Have the victim sit with the head slightly forward so that blood trickling down the throat will not be breathed into the lungs. Do not put the head back.
2. Ensure that the victim's airway remains open.
3. Keep the victim quiet. Anxiety will increase blood flow.

XIV. Treating Hypothermia

A. Hypothermia is a condition that occurs when the body's temperature drops below normal. Hypothermia may be caused by exposure to cold air or water or by inadequate food combined with inadequate clothing and/or heat, especially in older people. The primary signs and symptoms of hypothermia are:

1. A body temperature of 95° Fahrenheit / 37° Celsius, or less.
2. Redness or blueness of the skin.

Treating Hypothermia (Continued)

3. Numbness accompanied by shivering.
4. In later stages, hypothermia will be accompanied by:
 - Slurred speech.
 - Unpredictable behavior.
 - Listlessness.

B. Because hypothermia can set in within only a few minutes, you should treat victims who have been rescued from cold air or water environments by:

1. Removing wet clothing.
2. Wrapping the victim in a blanket or sleeping bag and covering the head and neck.
3. Protecting the victim against the weather.
4. Providing warm, sweet drinks and food to conscious victims.
5. **Do not** offer alcohol or massage.
6. Placing an unconscious victim in the recovery position.
7. Placing the victim in a warm bath if the victim is conscious.
8. **Do not** allow the victim to walk around even when he or she appears to be fully recovered.
9. If the victim must be moved outdoors, you should cover the victim's head and face.

Disaster Medical Operations pt. 2

NEXT . . .

1. If your CERT class continues on the same day, take your break and return to this classroom.
2. If your CERT class continues on another day (next week or next month) your **Homework Assignment** is to:
 - a. Read and familiarize yourself with Unit 6: Light Search and Rescue Operations before the next session.
 - b. Obtain a blanket for use during Unit 6.

End of Unit Five

Unit Six: Light Search and Rescue Operations

I. Unit overview and objectives

A. Unit Overview

1. This unit will focus on the components of an effective search and rescue operation—size-up, search, and rescue—and the methods and techniques that rescuers can use to locate and safely remove victims.

2. Experience from previous disasters has shown that immediately after almost every disaster, the first response to trapped victims is by spontaneous, untrained, and well-intentioned persons who rush to the site of a collapse in an attempt to free the victims. More often than not, these spontaneous rescue efforts result in serious injuries and compounded problems. However well-meaning, rescue efforts should be planned and practiced in advance. The decision to attempt a rescue should be based on two factors:

- a. The risks involved to the rescuer
- b. The overall goal of doing the greatest good for the greatest number of people

Light Search and Rescue Operations

Unit Overview (Continued)

3. The goals of search and rescue operations are to:
 - a. Rescue the greatest number of people in the shortest amount of time.
 - b. Rescue lightly trapped victims first.
4. Search and rescue consists of three separate operations:
 - a. Size-up involves assessing the situation and determining a safe action plan.
 - b. Search involves locating victims and documenting their location.
 - c. Rescue involves the procedures and methods required to extricate the victims.
5. The most important person in a rescue attempt is the rescuer.
6. Effective search and rescue operations hinge on:
 - a. Effective size-up.
 - b. Rescuer safety.
 - c. Victim safety.

B. Unit Objectives

1. By listening, participating and interacting in class activities, by the end of this unit participants should be able to accurately:
 - a. Identify size-up requirements for potential search and rescue situations.
 - b. Describe the most common techniques for searching a structure.
 - c. Use safe techniques for debris removal and victim extrication.
 - d. Describe ways to protect rescuers during search and rescue operations.

Light Search and Rescue Operations

II. Search and Rescue Size-up

A. Search and rescue requires size-up at the beginning of the operation and repeatedly as long as the operation continues. Size-up is a 9-step process that was presented in Unit 2. This section will focus on size-up as it relates to search and rescue operations.

1. Can a search and rescue be safely attempted by CERT members?

- a. If yes, proceed with the checklist.

- b. If no, do not attempt a search and rescue.

- c. Are there other, more pressing needs at the moment?
If yes, list.

2. CERT Light Search and Rescue Checklist follows on the next five pages.

- a. The nine steps of the plan are explained after the charts.

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

Unit Six: Chart One CERT Light Search and Rescue Size-up Checklist (page 1 of 5)

Step 1: Gather Facts

A. Time

1. Does the time of day or week affect search and rescue efforts?

2. How?

	Yes	No	
--	-----	----	--

B. Type Of Construction

1. What type(s) of structure(s) is(are) involved?

2. What type(s) of construction is (are) involved?

C. Occupancy

1. Are the structures occupied?
If yes, how many people are likely to be affected?

	Yes	No	
--	-----	----	--

2. Are there special considerations (e.g. children, mobility impaired, elderly, etc.)
If yes, what are the special considerations?

	Yes	No	
--	-----	----	--

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

Unit Six: Chart One CERT Light Search and Rescue Size-up Checklist (page 2 of ?)

Step 1: Gather Facts (Continued)

D. Weather

1. Will weather conditions affect your safety?
If yes, how will your safety be affected?

	Yes	No	
--	-----	----	--

2. Will weather conditions affect the search and rescue situation be affected?

	Yes	No	
--	-----	----	--

E. Hazards

1. Are hazardous materials involved?
If yes, what hazardous materials?

	Yes	No	
--	-----	----	--

2. Are any other types of hazards likely to be involved? If yes, what other hazards?

	Yes	No	
--	-----	----	--

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

Unit Six: Chart One CERT Light Search and Rescue Size-up Checklist (page 3 of 5)

Step 2: Assess and Communicate the Damage

- A. Go around the building. Is the damage beyond the CERT team's capability?
If yes, what special requirements or qualifications are required?

	Yes	No	
--	-----	----	--

- B. Are normal communication channels functioning?

	Yes	No	
--	-----	----	--

Step 3: Consider Probabilities

- A. Life Hazards - Are there potentially life-threatening hazards? If yes, what are the hazards?

	Yes	No	
--	-----	----	--

- B. Additional Damage - Is there great risk or potential for more disaster activity that will impact personal safety? If yes, what are the known risks?

	Yes	No	
--	-----	----	--

Step 4: Assess Your Own Situation

- A. What resources are available with which you can attempt the search and rescue?

- B. What equipment is available?

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

Unit Six: Chart One CERT Light Search and Rescue Size-up Checklist (page 4 of 5)

Step 5: Establish Priorities

A. Can a search and rescue be safely attempted by CERT members?

	Yes	No	
--	-----	----	--

- If no, do not attempt a search and rescue
- If yes, list.

Step 6: Make Decisions

A. Where will deployment of available resources do the most good while maintaining an adequate margin of safety?

Step 7: Develop Plan of Action

A. Determine how personnel and other resources should be deployed.

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

Unit Six: Chart One
CERT Light Search and Rescue Size-up
Checklist (page 5 of 5)

Step 8: Take Action

A. Put the plans into effect.

Step 9: Evaluate Progress

A. Continually size up the situation to identify changes in the:

- Scope of the problem.
- Safety risks.
- Resource availability.
- Adjust strategies as required.

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

B. Step 1: Gather Facts –The facts of the situation must guide your search and rescue efforts. When gathering facts, you need to consider:

1. The time of the event and day of the week. At night, more people will be in their homes, so the greatest need for search and rescue will be in residential settings. Conversely, during the day, people will be at work, so the need will be in commercial buildings.
2. Some emergency services are not available—or not available in the same numbers—during the evenings or on weekends. Search and rescue operations may also be affected by where people are located in their homes and the amount of daylight available.
3. The type of structure. The design of the structure may indicate the likely number of victims and their locations.
4. Construction type. Some types of construction are more susceptible to damage than others.
5. Weather. Severe weather will have an effect on victims and rescuers and will hamper rescue efforts. Forecasts of severe weather will be a limiting factor on search and rescue efforts.
6. Hazards. Knowledge of other potential hazards in the general and immediate areas is important to search and rescue efforts. Time lost trying to locate and shut off utilities, for example, can have a big impact in terms of loss of life.

C. Exercise: Gathering Facts

1. Purpose: This exercise is an interactive activity to give you the opportunity to consider some of the facts that CERT search and rescue teams will need to gather during size-up.
2. Instructions: Read Scenario 5-1 on the following page. Brainstorm the six questions that follow the scenario.

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

3. Scenario 5-1

At 2:30 p.m. on Tuesday, August 9, a squall line passed through your town. Because of the difference in barometric pressure on either side of the front, the squall line was preceded by a “gust front” with straight-line winds of more than 70 miles per hour. The gust front was followed by continued strong winds and extremely heavy rain. Electricity was knocked out throughout the town.

You activate in accordance with standard operating procedures (SOPs) for CERT. On the way to the staging area at the local high school, you notice considerable damage, including felled trees and utility lines. Many streets are impassable, making you take a roundabout route to the high school. As you make your way to the staging area, you see that the roof has blown off a large portion of a local strip shopping center and that the exterior wall on the west end of the structure has collapsed.

After reaching the staging area, you check in with the Logistics Team Leader, who assigns you to Search and Rescue Team 2. Although CERT teams cannot venture into the section of the shopping center that has collapsed, Search and Rescue Team 2 will be searching near the collapsed area to see if there are victims in that area.

4. Questions:

- a. What does this scenario tell you about the probable density for the affected area?
- b. What does this scenario tell you about the facts that must be gathered?
- c. What impact could these facts have on search and rescue operations?
- d. What kinds of search and rescue operations are probable?
- e. What, if any, are the constraints that search and rescue personnel may face in this scenario?
- f. Can these constraints be overcome within the established CERT mission? If so how?

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

D. Step 2: Assess and Communicate Damage – There are general guidelines for assessing damage. When in doubt about the condition of a building, always use the more restrictive assessment. For example, if you are unsure about whether a building is moderately or heavily damaged, assume heavy damage. The CERT mission changes depending on the amount of structural damage.

1. Slight damage includes:

- Superficial damage.
- Broken windows.
- Fallen or cracked plaster.
- Minor damage to the interior contents.

2. Moderate damage includes:

- Visible signs of damage.
- Decorative work damaged or fallen.
- Many visible cracks in plaster.
- Major damage to interior content.
- Note that a moderately damaged building is still attached to the foundation.

3. Heavy damage includes:

- Partial or total collapse.
- Tilting.
- Obvious structural instability.
- Heavy smoke or fire.
- Hazardous materials inside.

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

- Gas leaks.
 - Rising or moving water.
 - Note that a heavily damaged building is not attached to the foundation. Do not enter a building with heavy damage under any circumstances. Look at a building from all sides.
4. Communicate your findings to the CERT command post or responding agencies.
- a. After—or in conjunction with—the damage assessment, CERT personnel must consider probable amounts of damage based on the type and age of construction. Experienced search and rescue personnel can determine probable damage to a structure based on the event and the types of structures involved.

Unit Six: Light Search and Rescue Operations Chart One: CERT Mission by Structural Damage Category	
If Structural Damage Is . . .	Then The CERT Mission Is . . .
Light	To locate, triage, and prioritize removal of victims to designated treatment areas by the medical operation teams.
Moderate	To locate, stabilize and immediately evacuate victims to a safe area while minimizing the number of rescuers inside the building.
Heavy	To secure the building perimeter and warn others about the danger of entering the building.

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

E. Step 3: Consider Probabilities – Because CERT members will be working in such close proximity to the dangerous situation, considering what will probably happen and what could happen are of critical importance. Identify potentially life-threatening hazards:

1. How stable the situation really is. A structure that appears to stable or moderately damaged from the outside may pose great danger to the rescue team if it is damaged on the inside. Think about what possibilities for danger exist in and around buildings:

- Are lawn chemicals, paints, or other potentially hazardous materials stored within the structure?
- How are they stored?
- Where are they?

It won't take much time to answer these questions, but the answers could make a huge difference in how they approach the search.

2. What else could go wrong? Based on the information gathered during steps 1 and 2 of the size-up, take a few moments to play "What if?" to try to identify additional risks that they may face.

- What if the electricity fails during the search?
- What if a wall that appears stable shifts and collapses?

Applying "Murphy's Law" to the situation could save the CERT team's lives.

3. What it all means for the search and rescue. Think about what can be done to reduce probable risks.

- Is a spotter necessary to look for movement that could indicate a possible collapse and warn the rescue team?
- Is some remedial action required to stabilize nonstructural hazards before beginning the search?

Search and rescue teams must remember that their own safety is the first priority.

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

F. Step 4: Assess Your Situation – Size-up is a building process, with each step building upon the previous steps until the decision is made to begin the search and rescue operation (or that the situation is unsafe). Assessing resources is extremely important to search and rescue operations. Draw on everything you've learned from steps 1 through 3 to assess your situation to determine:

- a. Whether the situation is safe enough to continue.
- b. The risks that rescuers will face if they continue.
- c. What resources will be needed to conduct the operation safely (and what resources are available).

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

Unit Six: Light Search and Rescue Operations Chart Two: Search and Rescue Resource Planning Questions	
Resource	Planning Questions
Personnel	<ul style="list-style-type: none">○ Who lives and/or works in the area?○ During which hours are these people most likely to be available?○ What skills or hobbies do they have that might be useful in search and rescue operations?○ What might be the most effective means of mobilizing their efforts?
Equipment	<ul style="list-style-type: none">○ What equipment is available locally that might be useful for search and rescue?○ Where is it located?○ How can it be accessed?○ On which structure type might it be most effective?
Tools	What tools are available that might be useful for lifting, moving or cutting disaster debris?

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

G. Step 5: Establish Priorities – After evaluating the situation, the next step is to determine what should be done and in what order.

1. The safety of CERT members is always the first priority and will dictate some of your other priorities.
 - For example, removing or mitigating known hazards must be completed before teams begin to search. Think through the situation logically to determine how you should approach the operation.

H. Step 6: Make Decisions – You are at the point in the size-up where you will make decisions about where to deploy your resources to do the most good, while maintaining an adequate margin of safety. Many of your decisions will be based on the priorities established during step 5. Those priorities are based on (in order):

1. The safety of CERT members.
2. Life safety for victims and others.
3. Protection of the environment.
4. Protection of property.

I. Step 7: Develop Plan of Action – Step 7 is where all of the information you have about the situation comes together. During step 7, the team leader will decide specifically how the team will conduct its operation, considering the highest priority tasks first. Action plans do not need to be written, but, when search and rescue operations are required, the situation is probably complex enough that a written plan of some type should be developed. Even a simple written plan will:

1. Help focus the operation on established priorities and decisions.
2. Provide documentation to be given to responding agencies when they arrive.
3. Provide documentation that can be used, if necessary, after the incident.
4. Keep a notebook for jotting notes when developing an action plan. These notes should include changes to the plan that are made based on new information that comes in.

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

J. Step 8: Take Action and Step 9: Evaluate Progress

The plan developed during step 7 is put into action during step 8. Evaluating Progress, Step 9, is the most critical not only in terms of evaluating whether the plan works, but also from a safety standpoint. Sizeup is ongoing. Information gained during step 9 needs to be fed back into the decision making process for possible revision of priorities and updated action planning.

K. Safety Considerations – Regardless of the severity of structural damage, rescuer safety must be the primary concern. The two most frequent causes of rescuer deaths are disorientation and secondary collapse. Follow these guidelines during all search and rescue operations:

1. Use a buddy system. Always work in pairs, with a third person acting as a runner (an individual who will go back and forth with information or for supplies).
2. Be alert for hazards (e.g., power lines, gas leaks, hazardous materials, sharp objects, etc.).
3. You should never attempt to search an area where water is present.
4. Use safety equipment. Wearing gloves and a helmet will protect a rescuer's hands and head. Also, the primary cause of rescuer problems after working in a structural collapse is breathing dust, so a dust mask is essential. However, a dust mask will not filter out all harmful materials.
5. Have backup teams available to allow rotating of teams, prevent fatigue, and ensure help if a team gets into trouble. Have teams drink fluids and eat to keep themselves fresh.

Successful search and rescue depends on teamwork

Light Search and Rescue Operations

Search and Rescue Size-up (Continued)

L. Exercise: Search and Rescue Size-up

1. Purpose: This exercise is an interactive activity to give you an opportunity to practice some of the thinking processes involved in planning and search and rescue size-up.

a. The brainstorming required will help you to begin to assess your neighborhood or workplace in terms of building structures, hazardous materials, safety precautions that need to be taken, etc.

b. The exercise will be based on several different types of local buildings (one for each small group) for the most probable type of disaster that the community will face.

2. Instructions: Use the following steps to complete this exercise:

a. Given the disaster and the specific building assigned to your group, answer the following questions:

- What are the pertinent facts that must be gathered?
- What kind of prediction can you make regarding damage, based on the incident and the building construction?
- What probable search and rescue problems can you identify?
- What specific safety considerations can you identify?

b. Select a spokesperson to present your group's responses to the class.

Light Search and Rescue Operations

III. Conducting Search Operations

A. When the decision is made to initiate search operations, CERT members must inspect the area assigned by the CERT Area Team Leader. The search operation involves two processes:

- Employing search techniques based on the size-up
- Locating potential victims

By using these processes, search operations will be more efficient, thorough, and safe. They will also facilitate later rescue operations.

B. Locating Potential Victims – The first step in locating potential victims is to conduct a size-up of the situation inside the structure to gather more precise information about damage and to develop priorities and plans. The data gathered will provide more information about areas of entrapment or voids. There are several types of voids: pancake void, lean-to-void, “V”-void and individual voids.

1. Pancake voids are most common in buildings that were constructed before 1933. They are created by weakening or destruction of load-bearing walls, which allows the floors to collapse into each other.

a. Pancake voids are the most difficult and time-consuming to search.

b. Remember the dangers of unreinforced masonry structures. If CERT members see pancake voids, this is considered heavy damage, and they should **get out immediately**.

2. “V” voids – are created by a “V” collapse of a floor or wall (the middle collapses and the ends lean against an outside wall). Remind the group that a “V” void creates two lean-to voids, one on either side of the collapse, in which victims can be trapped—but the sloping floor caused by the “V” collapse presents a severe potential hazard to the rescue team.

a. If CERT members encounter “V” voids, they should **leave the building immediately**.

Light Search and Rescue Operations

Conducting Search Operations (Continued)

3. Lean-to voids – are created when a collapsed wall or floor is resting against an outside wall. A victim trapped in a lean-to void has the greatest chance of being alive.

a. Lean-to voids also indicate structural instability. If CERT members see lean-to voids, they should note the location for professional responders but **leave the building immediately!**

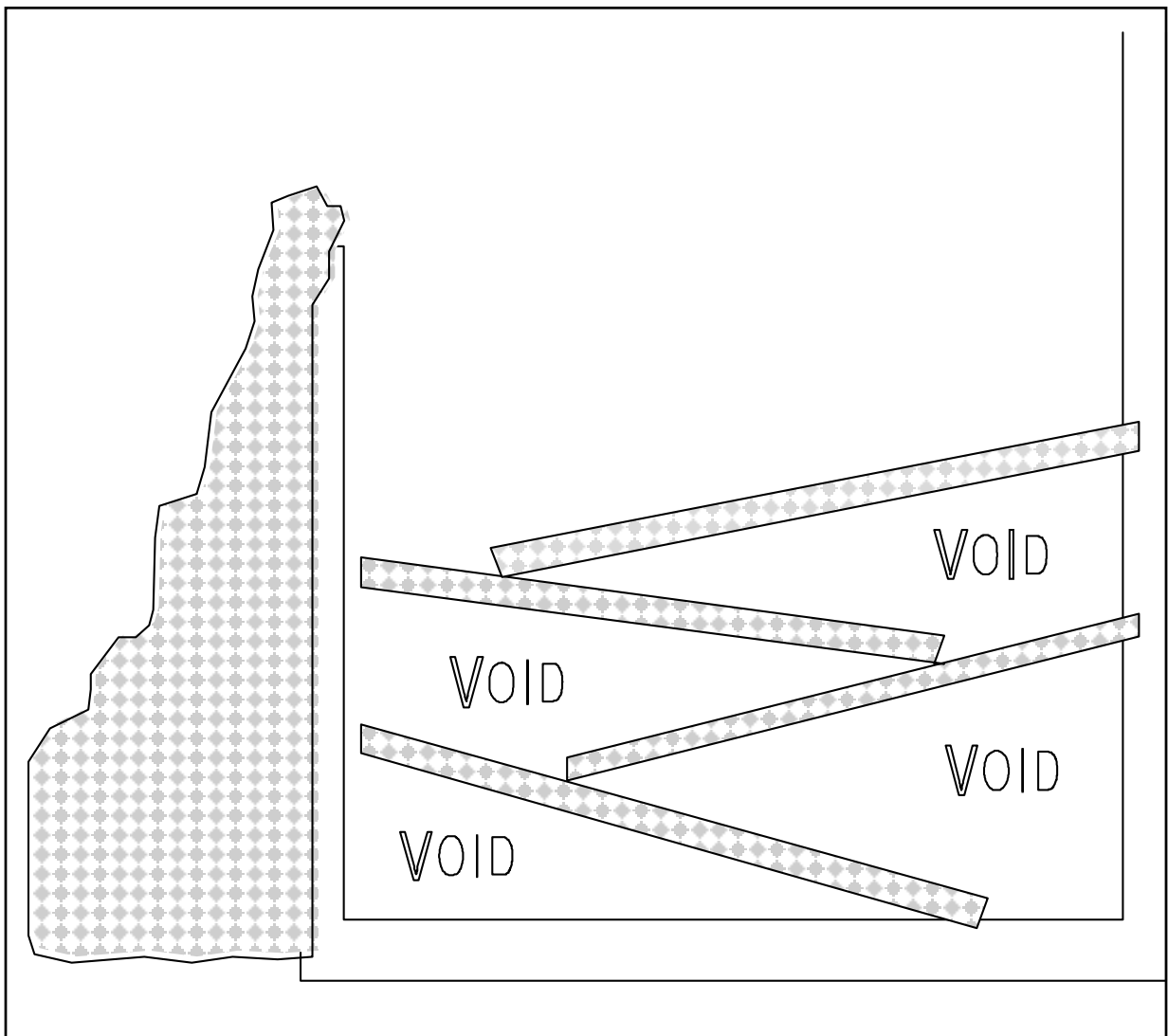
4. Individual voids – are spaces into which the victim may have crawled for protection. Examples of individual voids include bathtubs and the space underneath desks. Children may seek shelter in smaller spaces like cabinets.

Visual Images of voids follow on the next three pages.

Light Search and Rescue Operations

Conducting Search Operations (Continued)

Unit Six: Light Search and Rescue Operations Visual One: Pancake Void



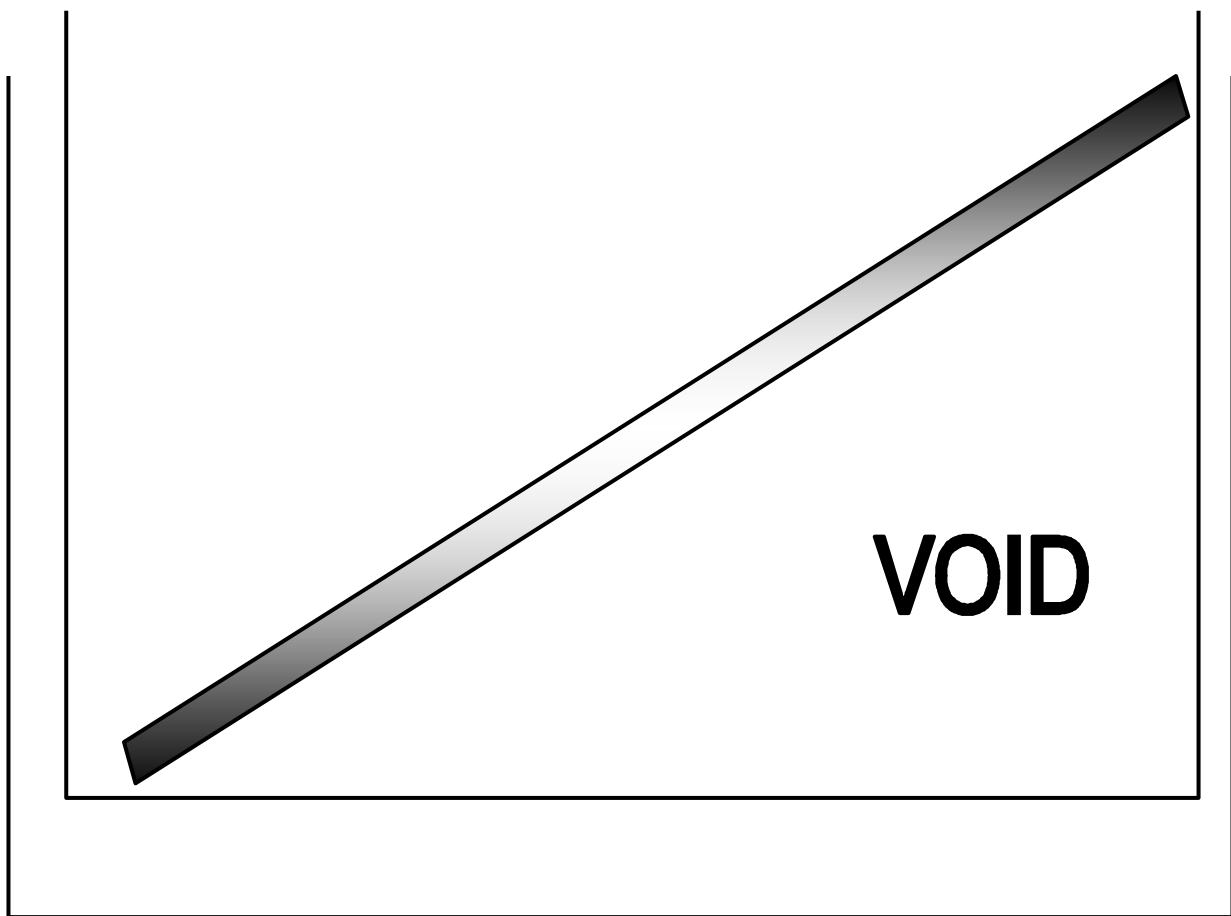
Pancake Void

Where floors collapse diagonally onto each other, creating voids in the areas where the floors remain attached to the walls.

Light Search and Rescue Operations

Conducting Search Operations (Continued)

Unit Six: Light Search and Rescue Operations Visual Two: Lean-to-Void



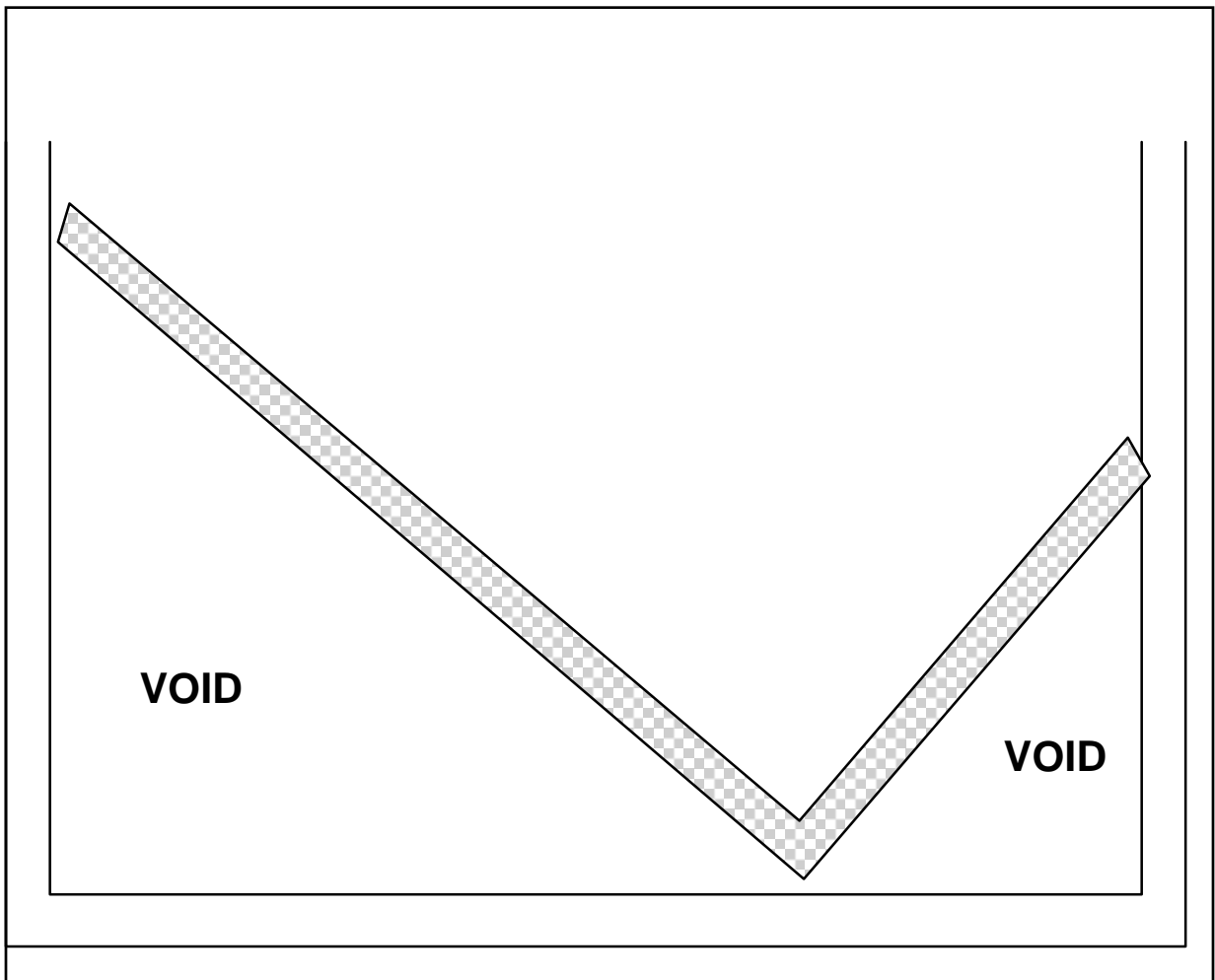
Lean-to-Void

This is a Lean-To Void, in which a collapsed wall or floor leans against an outside wall, creating a void where the floor remains attached to the wall.

Light Search and Rescue Operations

Conducting Search Operations (Continued)

Unit Five: Light Search and Rescue Operations Visual Three: “V” Void



“V” Void

“V” void, in which the floor or wall collapses at or near the center, creating voids on either end next to the walls.

Light Search and Rescue Operations

Conducting Search Operations (Continued)

C. After identifying the possible areas of entrapment, CERT members must:

1. Determine the potential number of victims.
2. Identify the most probable areas of entrapment.

D. Some of this information may be known through planning, but CERT members may need to get some information by talking to bystanders or those who are familiar with the structure. Bystanders may be confused by the event. They may tend to exaggerate potential numbers or may not even remember the event accurately. Gather as much information as you can, though, because it will be useful for planning search priorities and implementing the search. CERT members should ask questions when talking with these individuals, including:

1. How many people live or work in the building?
2. Where would they be at this time?
3. What is the building layout?
4. What have you seen or heard?
5. Has anyone come out?
6. What are the normal exit routes from the building?

E. Search Methodology – An effective search methodology, Indicates rescuer location and prevents duplication of effort. Experienced search and rescue personnel have found these search methods to be effective:

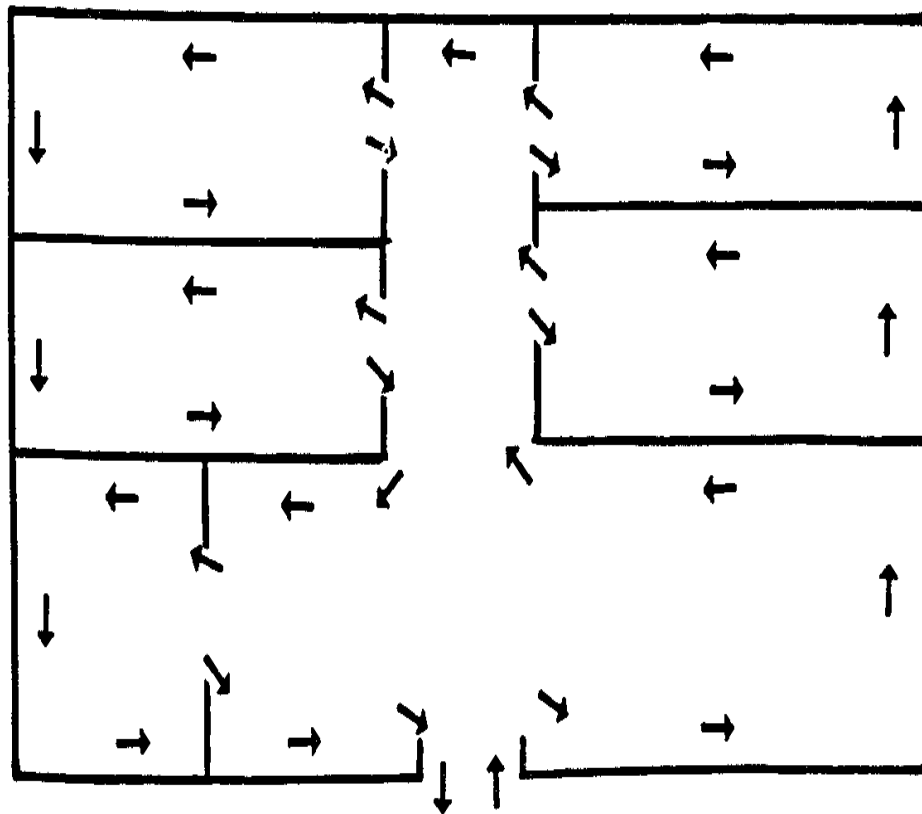
1. Begin the search by calling out to victims. Shout something like, "If anyone can hear my voice, come here." If any victims respond, give them further directions such as "Stay here" or "Wait outside" (depending on the condition of the building). Ask victims who respond for any information that they may have about the building or others who may be trapped.

Light Search and Rescue Operations

Conducting Search Operations (Continued)

2. Use a systematic search pattern. Ensure that all areas of the building are covered. Examples of systematic search patterns to use include a Bottom-up/top-down then right wall/left wall.

Unit Six: Light Search and Rescue Operations Visual Four: Systematic Room-Search Pattern



Systematic Room-Search Pattern

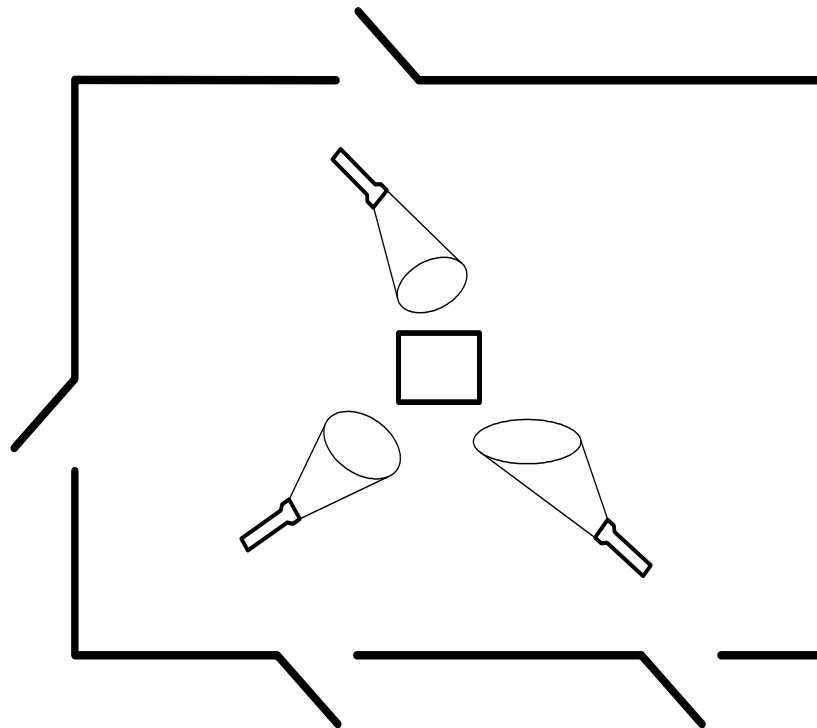
Bottom-up/top-down or right wall/left wall
to ensure that the entire building is searched.

Light Search and Rescue Operations

Conducting Search Operations (Continued)

3. Stop frequently to listen. Listen for tapping, movement, or voices.
4. Triangulate. Triangulation enables rescuers to view a single location from several perspectives. Three rescuers, guided by victim sounds, form a triangle around the area and direct flashlights into the area. The light shining from different directions will eliminate shadows that could otherwise hide victims.

Unit Six: Light Search and Rescue Operations Visual Five: Triangulation



Triangulation: Three rescuers guided by victim sounds form a triangle around the area and direct flashlights into the areas. The light will help eliminate shadows.

Light Search and Rescue Operations

Conducting Search Operations (Continued)

5. Mark searched areas to document results. Make a single diagonal slash next to the door just before entering a structure. Make an opposite slash, creating an "X", when all occupants have been removed and search and rescue efforts have been completed. The "X" signals to other potential searchers that the area has already been searched. This method:

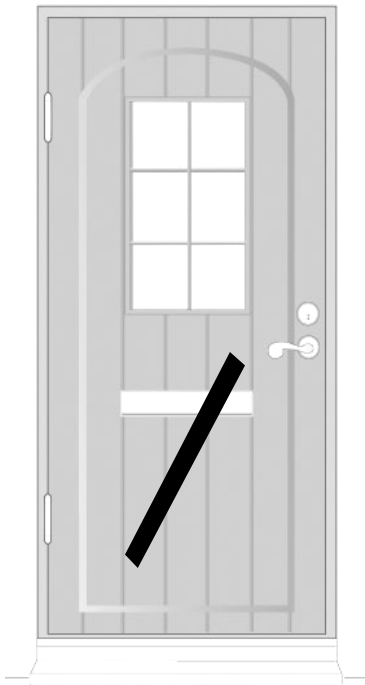
- Indicates rescuer location.
- Prevents duplication of effort.

6. Report results. Keep complete records both of removed victims and of victims who remain trapped or are dead. Report this information to emergency services personnel when they reach the scene.

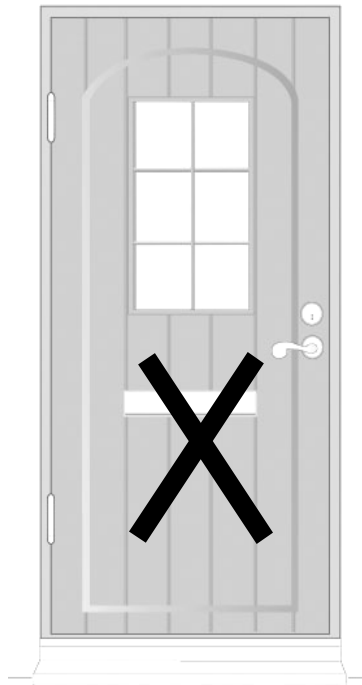
Light Search and Rescue Operations

Conducting Search Operations (Continued)

Unit Six: Light Search and Rescue Operations Visual Six: Marking Searched Areas – Diagonal Slashes



Entering the structure



Exiting the structure

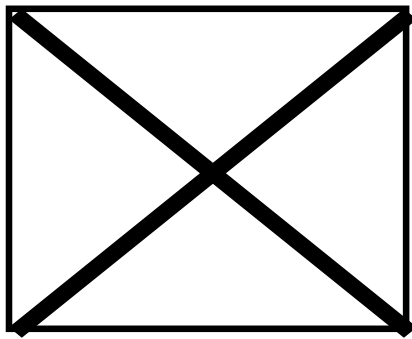
Marking Searched Areas

Showing a single diagonal slash next to the door just before someone enters a structure and the addition of an opposite slash, creating an “X” indicating all occupants have been removed and the search effort on this area is complete.

Light Search and Rescue Operations

Conducting Search Operations (Continued)

Unit Six: Light Search and Rescue Operations Visual Seven: Marking Searched Areas – DO NOT ENTER



Dangerous – DO NOT ENTER

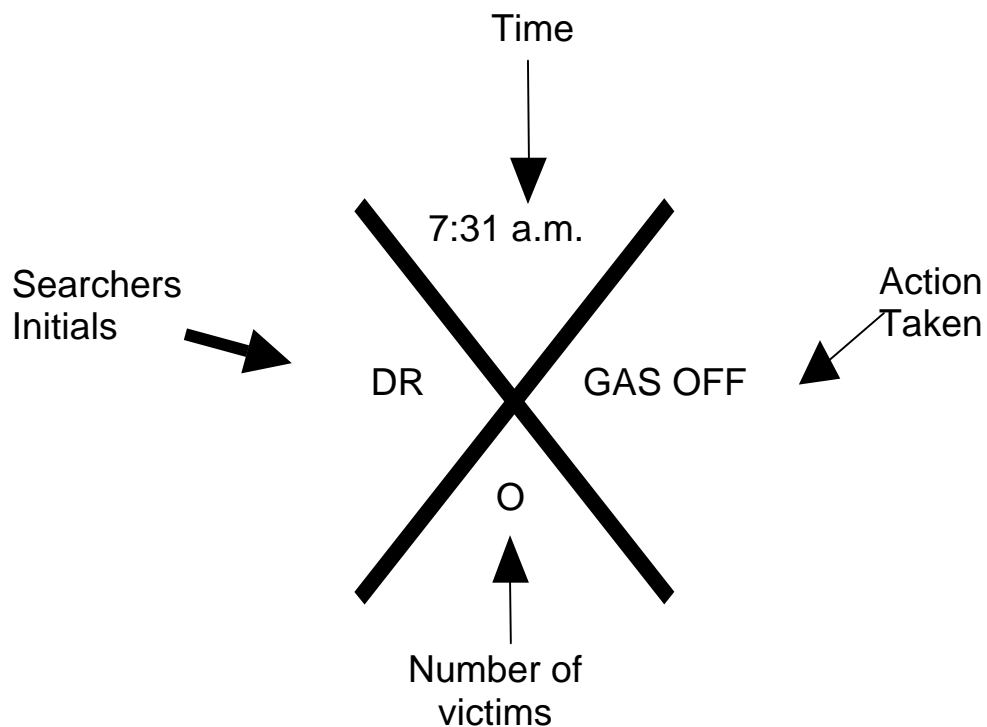
Marking Searched Areas

The “X” indicates the structure is too dangerous to enter.
DO NOT ENTER a structure when this mark is visible.

Light Search and Rescue Operations

Conducting Search Operations (Continued)

Unit Six: Light Search and Rescue Operations Visual Eight: Marking Searched Areas – Search Completed Mark



Search Completed Mark

In each quadrant of the large “X” searchers leave information regarding the search they conducted on the structure.

- The center top quadrant of the “X” contains the time the search began
- The right side of the “X” contains the action taken by the searchers.
- The center lower quadrant of the “X” contains the number of victims from the structure.
- The left side of the “X” contain the searchers initials.

Light Search and Rescue Operations

IX. Conducting Rescue Operations

A. Rescues involve three primary functions:

1. Creating a safe rescue environment by lifting objects out of the way, using tools to move objects and removing debris.
2. Triaging or stabilizing victims.
3. Removing victims in a moderately damaged building. Call in the medical team in a lightly damaged building.

B. Creating a Safe Environment – There are three goals for all rescue operations:

1. To maintain rescuer safety
2. To triage in lightly and moderately damaged buildings
3. To evacuate victims as quickly as possible from moderately damaged buildings while minimizing additional injury

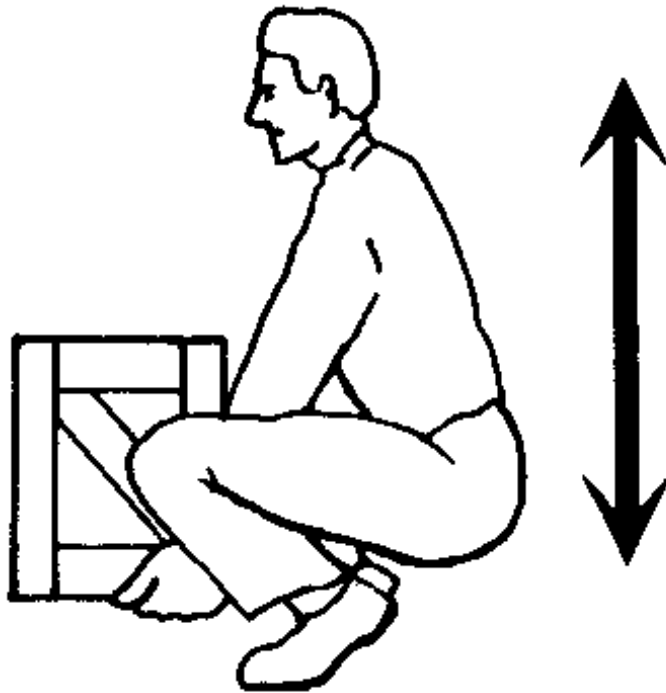
C. None of these goals can be achieved without creating as safe an environment as possible before attempting rescue. There are, therefore, certain precautions that rescuers must take to minimize risk.

1. Know your limitations. Volunteers have been injured or killed during rescue operations because they did not pay attention to their own physical and mental limitations. CERT rescuers should take the time to eat, drink fluids, rest, and relax so that they can return with a clear mind and improved energy.
2. Follow safety procedures. CERT members should always use the proper safety equipment required for the situation and follow established procedures, including:
 - a. Working in pairs.
 - b. Never entering an unstable structure.
 - c. Lifting by bending the knees, keeping the back straight, and pushing up with the legs.
 - d. Carrying the load close to the body.
 - e. Lifting and carrying no more than is reasonable.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

Unit Six: Light Search and Rescue Operations Visual Nine: Proper Body Position for Lifting



Proper Body Position for Lifting

Proper Body Position for Lifting showing the back straight and lifting with the knees.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

D. You may encounter situations in which debris needs to be moved to free victims. In these situations, CERT rescuers should consider leveraging and cribbing to move and stabilize the debris until the rescue is complete.

1. Leveraging is accomplished by wedging a lever under the object that needs to be moved, with a stationary object underneath it to act as a fulcrum. When the lever is forced down over the fulcrum, the far end of the lever will lift the object.
2. A crib is a wooden framework used for support or strengthening. Box-Cribbing is a process by which a pair of wood pieces is stacked alternately to form a stable rectangle.
3. Leveraging and cribbing are used together by alternately lifting the object and placing cribbing materials underneath the lifted edge to stabilize it. Remember safety is your number one concern: "Lift an inch; crib an inch."
4. Leveraging and cribbing should be gradual—both for stability and to make the job easier. It may also be necessary to use leveraging and cribbing at more than one location (e.g., front and back) to ensure stability. When you are able to achieve sufficient lift, remove the victim and reverse the leveraging and cribbing procedure to lower the object.
5. When you must remove debris to locate victims, you should set up a human chain and pass the debris from one person to the next. Set up the chain in a position that will not interfere with rescue operations. Wear leather gloves to protect your hands.

E. Removing Victims – There are two basic types of removal: self-removal or assist as well as lifts and drags

1. It is usually best to allow an ambulatory victim to extricate him or herself. However, sometimes ambulatory victims are not as strong and uninjured as they think that they are. When victims become free from entrapment, they may need assistance to exit the structure.

Light Search and Rescue Operations

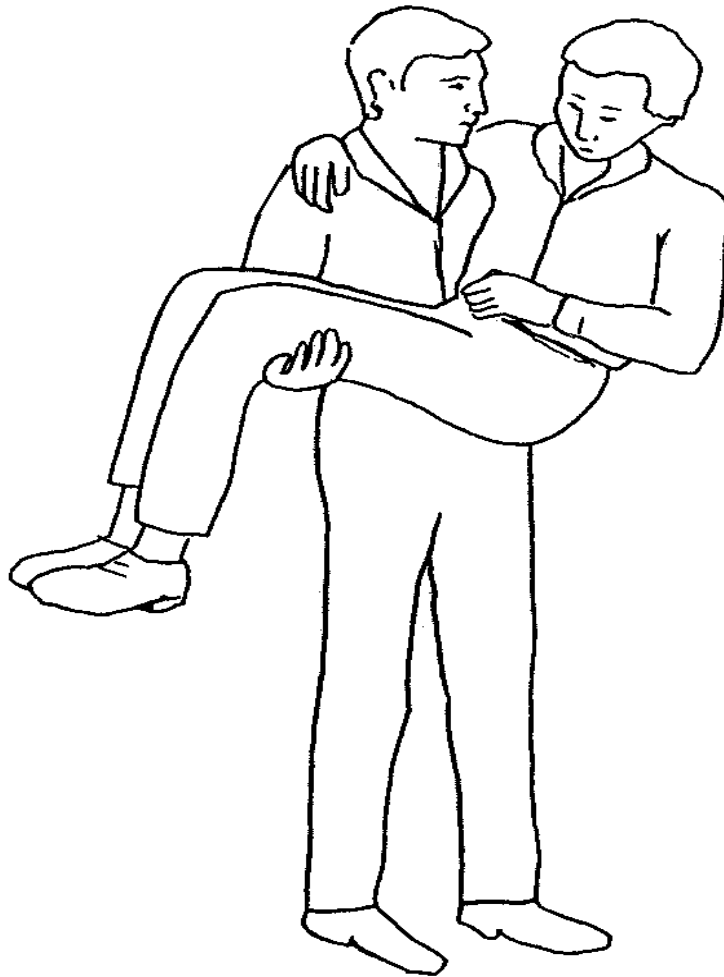
Conducting Rescue Operations (Continued)

2. The type of extrication method selected should depend on the:
 - a. General stability of the immediate environment.
 - b. Number of rescuers available.
 - c. Strength and ability of the rescuers.
 - d. Condition of the victim.
 3. If safety and time permit, **you should not use lifts and drags to remove victims when closed-head or spinal injury is suspected.** In such cases, the spine must be stabilized using a backboard. Doors, tables, and similar materials can be used as improvised backboards. The backboard must be able to carry the person, and proper lifting techniques must be used. When moving victims, rescuers must use teamwork and communication, and keep the victim's spine in a straight line. **Remember, rescuer safety and the condition of the building will dictate the approach.**
- F. There are several types of lifts and carries: the One-Person Arm Carry, One-Person Pack-Strap Carry, Two Person Carry, Chair Carry, Blanket Drag and the Individual Drag Technique.
1. One-Person Arm Carry – If the rescuer is physically able and the victim is small, he or she may use the one-person arm carry to lift and carry the victim by:
 - a. Reaching around the victim's back and under the knees.
 - b. Lifting the victim while keeping the rescuer's back straight and lifting with the legs.
 - c. Consider the size of the victim and the distance he or she needs to be carried before using this carry.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

Unit Six: Light Search and Rescue Operations Visual Ten: One-Person Arm Carry



One-Person Arm Carry

One-Person Arm Carry, showing the rescuer standing and holding the victim around the victim's back and under the knees.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

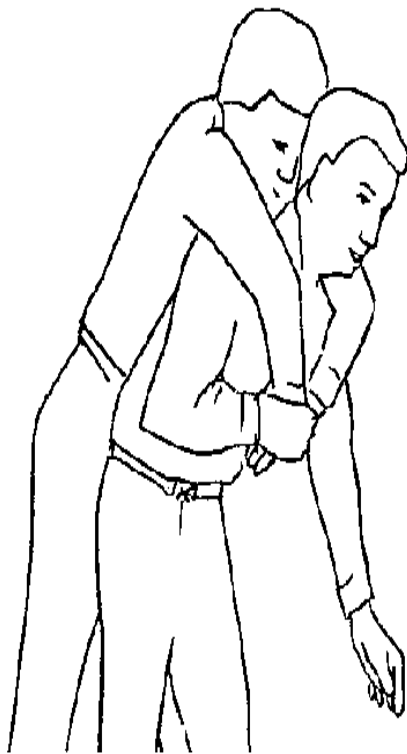
2. Pack-Strap Carry – Another way for a single rescuer to lift a victim safely is by using the one-person pack-strap carry. Using this method, the rescuer should follow the steps outlined below:

- a. Step 1: Stand with his or her back to the victim.
- b. Step 2: Place the victim's arms over the rescuer's shoulders and grab the hands in front of the rescuer's chest.
- c. Step 3: Hoist the victim by bending forward slightly, until his or her feet just clear the floor.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

Unit Six: Light Search and Rescue Operations Visual Eleven: The One-Person Pack-Strap Carry



One-Person Pack-Strap Carry

One-Person Pack-Strap Carry in which the rescuer places the victim's arms over his or her shoulder and grabs the victim's hands over his or her chest, then hoists the victim by bending over slightly.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

3. Two-Person Carry – Victim removal is easier when multiple rescuers are available. With two rescuers, a victim may be removed using a two-person lift. This lift takes place in the following three steps.

- a. Rescuer 1: Squat at the victim's head and grasp the victim from behind around the midsection. Reach under the arms and grasp the victim's forearms.
- b. Rescuer 2: Squat between the victim's knees, facing either toward or away from the victim. Grasp the outside of the victim's legs at the knees.
- c. Both rescuers: Rise to a standing position, keeping backs straight and lifting with the legs. Walk the victim to safety.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

Unit Six: Light Search and Rescue Operations Visual Twelve: The Two-Person Carry



Two-Person Carry

Two-Person Carry in which rescuer 1 squats at the victim's head and grasps the victim from behind at the midsection. Rescuer 2 squats between the victim's knees, grasping the outside of the knees. Both rescuers rise to a standing position.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

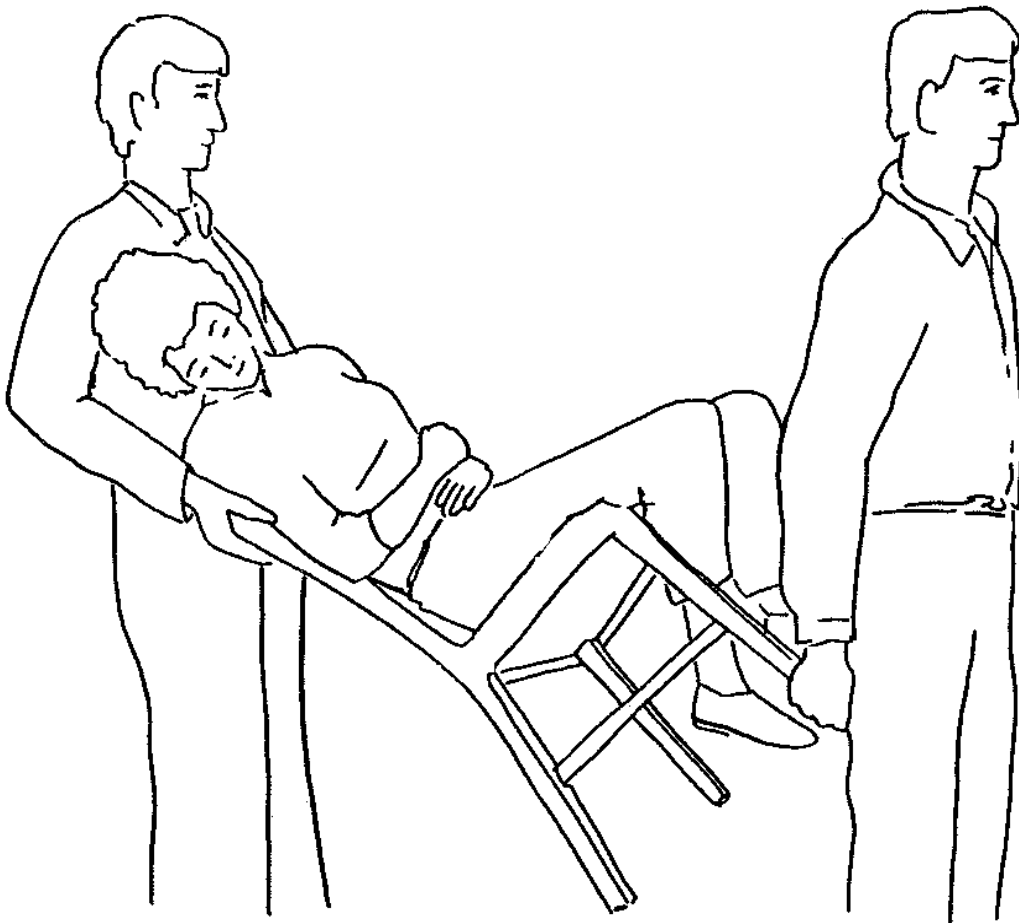
4. Chair Carry – Two rescuers can also remove a victim by seating him or her on a chair. This carry requires two rescuers. The Chair Carry is completed in the following three steps:

- a. Rescuer 1: Facing the back of the chair, grasp the back uprights
- b. Rescuer 2: Facing away from the victim, reach back and grasp the two front legs of the chair.
- c. Both rescuers: Tilt the chair back, lift, and walk out.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

Unit Six: Light Search and Rescue Operations Visual Thirteen: The Chair Carry



Chair Carry

Chair Carry in which the victim is placed in a chair and tilted backward as rescuers lift the victim. This carry requires two rescuers.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

5. Blanket Carry – A variety of materials, such as blankets, can be used as improvised stretchers. Rescuers can use the blanket carry for victims who cannot be removed by other means. The blanket carry requires at least six rescuers to ensure stability for the victim, and one rescuer must be designated the lead person. The blanket lift takes place in five steps outlined below. Additionally, the team must also lower the victim together. This takes place in two steps listed after the lift instructions.

- a. Blanket Carry Step 1: Lay a blanket next to the victim.
- b. Blanket Carry Step 2: Tuck the blanket under the victim, and roll the victim into the center of the blanket.
- c. Blanket Carry Step 3: With three rescuers squatting on each side and grasping a “handle,” the lead person checks the team for even weight distribution and correct lifting position.
- d. Blanket Carry Step 4: The lead person calls out, “Ready to lift on the count of three: One, two, three, lift.”
- e. Blanket Carry Step 5: The team lifts and stands in unison— keeping the victim level—and carries the victim feet first.
- f. Blanket Lowering Step 1: The lead person calls out, “Ready to lower on the count of three: One, two, three, lower.”
- g. Blanket Lowering Step 2: The team lowers the victim in unison, exercising caution to keep the victim level.

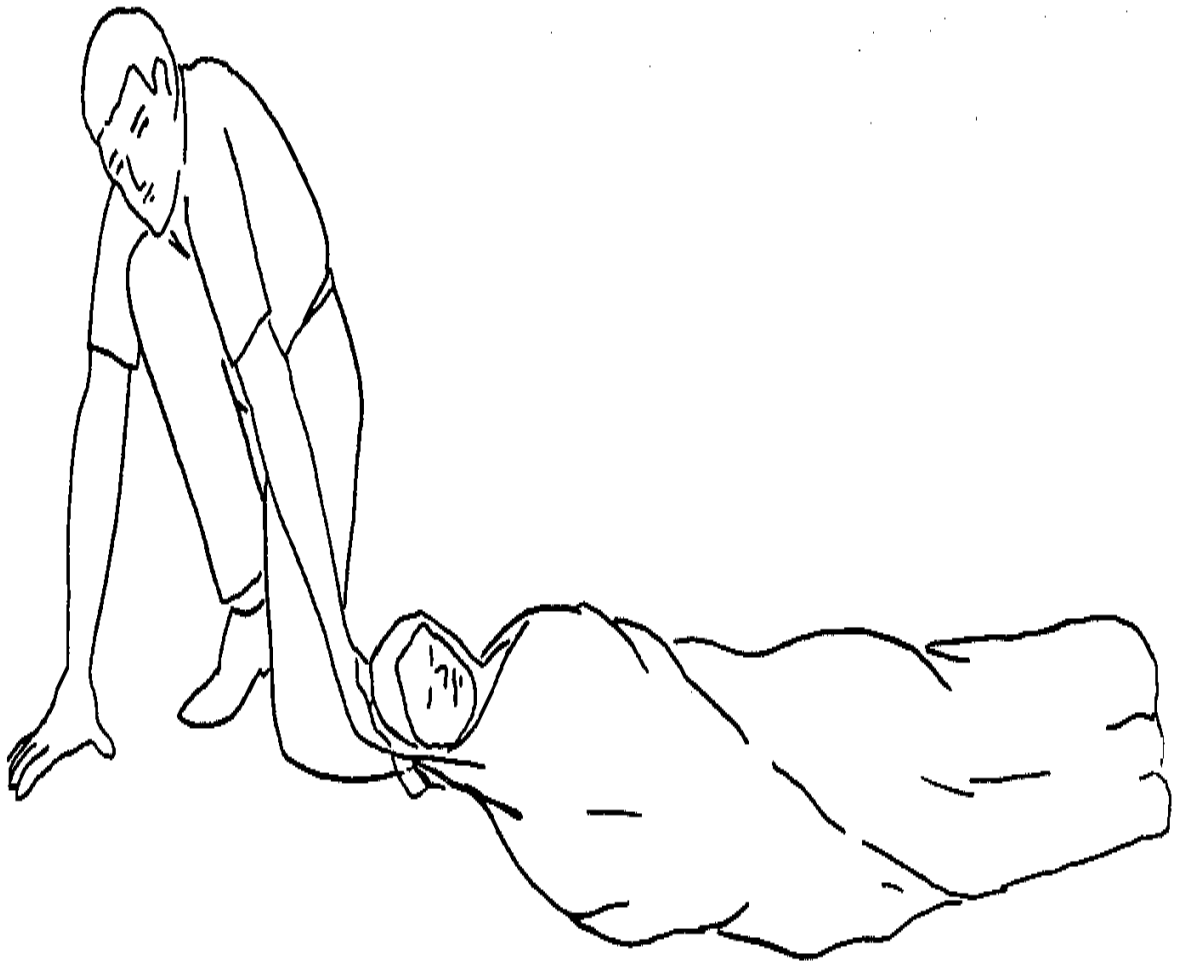
6. When necessary, one rescuer can use the blanket drag by following these steps:

- a. Step 1: Wrap the victim in a blanket.
- b. Step 2: Squat down and grasp an edge of the blanket.
- c. Step 3: Drag the victim across the floor.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

Unit Six: Light Search and Rescue Operations Visual Fourteen: The Individual Blanket Drag



Blanket Drag

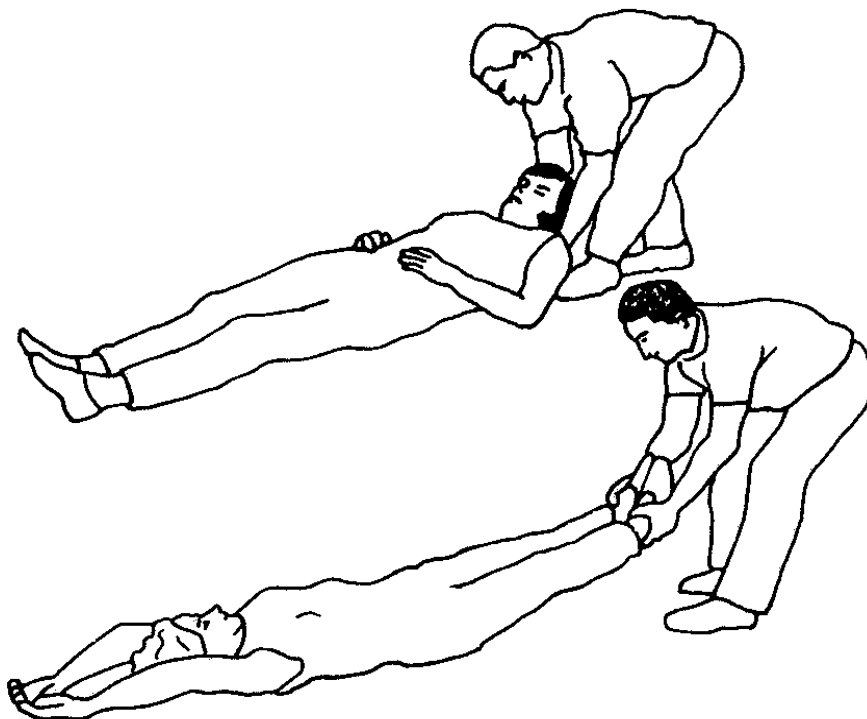
Blanket Drag, showing the victim wrapped in a blanket with the rescuer squatting at the victim's head. The rescuer grasps the blanket behind the victim's head and drags him or her clear of the hazard.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

7. Correct Drag Techniques – Rescuers can also drag a victim out of a confined area by grasping either under the arms or by the feet and pulling across the floor. However, unless there is no other way to remove the victim and the victim's removal is time critical, you should not use this drag when debris may cause additional injury.

Unit Six: Light Search and Rescue Operations Visual Fifteen: Correct Drag Techniques



Correct Drag Techniques

Correct Drag Technique, showing the rescuer grasping the victim by either the feet or shoulders and dragging him or her clear of the hazard.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

X. Exercise: Removing Victims

A. Purpose: This exercise will provide you with an opportunity to practice the removal of victims from a collapse situation, using leveraging/cribbing and drags and carries. You will be assigned into groups and assigned to do a room search, locate victims, and remove the victims.

B. Instructions: Use the following steps to complete this exercise:

1. Enter your assigned "collapse site" room, do a room search.
2. Locate the victims.
3. Use leveraging and cribbing procedures to free them.
4. Use appropriate lifts and drags to remove the victims from the room (and, if possible, from the building).
5. Rotate roles so that there are two new victims. Repeat the exercise until everyone has had an opportunity to practice being a rescuer.

XI. Unit Summary

A. Search and rescue consists of three different activities that must be planned carefully and practiced in advance. The decision to attempt a rescue should be based on:

1. The risks involved.
2. Achievement of the overall goal of doing the greatest good for the greatest number.

B. The objectives of search and rescue are to:

1. Maintain rescuer safety at all times.
2. Rescue the greatest number of people in the shortest amount of time.
3. Rescue the lightly trapped victims first.

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

C. CERTs are restricted to light search and rescue. Their mission when dealing with heavily damaged structures or situations that are clearly unsafe (e.g., rising or swiftly-moving water) is to warn others.

D. Search and rescue size-up follows the same process as does size-up for other CERT operations. Size-up continues throughout search and rescue efforts and provides information about how to proceed. Should size-up indicate that evacuation is necessary the CERT mission is to ensure safety and organization during the evacuation. When the decision to begin search operations is made, CERT searchers must:

1. Employ appropriate search techniques.
2. Locate potential victims.

E. Locating victims means completing a size up of the building interior to identify areas of entrapment, then conducting a search that:

1. Is systematic and thorough.
2. Avoids unnecessary duplication of effort.
3. Documents results.

F. Rescue involves three main functions:

1. Creating a safe environment
2. Triaging or stabilizing victims
3. Removing victims based on the size-up

G. Rescue operations hinge on maintaining rescuer safety, which requires CERT members to recognize their own limitations. CERT members should **never attempt anything that exceeds their limitations at that point in time.**

Light Search and Rescue Operations

Conducting Rescue Operations (Continued)

H. Leveraging and cribbing may be used to remove debris and give access to trapped victims. Victims can be removed in a number of ways, depending on:

1. Their condition.
2. The number of rescuers available.
3. The strength and ability of the rescuers.
4. The stability of the environment.

I. If the building's condition allows, victims with suspected head or spine injury should be stabilized on some type of backboard before being removed. If possible, these removals should be deferred to trained EMS personnel.

NEXT . . .

1. If your CERT class continues on the same day, take your break and return to this classroom.
2. If your CERT class continues on another day (next week or next month) your **Homework Assignment** is to:
 - Read and become familiar with Unit Seven: CERT Organization before the next session.

End of Unit Six